Incoming

Task ID# 2449

Denison Mines (USA) Corp.
1050 17th Street, Suite 950
Denver, CO 80265
USA

Tel : 303 628-7798
Fax : 303 389-4125

www.denisonmines.com

June 5, 2008

State of Utah
Department of Natural Resources
Division of Oil, Gas & Mining
1594 West North Temple, Suite 1210
Salt Lake City, UT 84114-5801

Attention: Mr. Paul Baker, Environmental Scientist, Minerals Regulatory Program

Re: Amendment to the Notice of Intent to Commence Large Mining Operations, Denison Mines (USA) Corp., Tony M Mine, M/017/0049, Garfield County, Utah

Dear Mr. Baker,

Denison Mines (USA) Corp. (Denison) is submitting this amendment to the Notice of Intention to Commence Large Mining Operations (the "Notice"), for the Tony M Mine M/017/0049, originally submitted on November 17, 2006 and revised in February, April, May, July, and August 2007, and May 2008. This draft submittal is provided as redline-strikeout.

If you have any questions on the contents of this transmittal, please call me at (303) 389-4136.

Yours very truly,

DENISON MINES (USA) CORP.

Christy Woodward

Christy Woodward, P.E.
Environmental Coordinator

cc:
Tetra Tech, file
Harold R. Roberts, Denison Mines (USA) Corp.

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DIV. OF OIL, GAS & MINING

Form MR-REV-att (DOGM – Revise/Amend Change Form)
(Revised September 14, 2005)

Application for Mineral Mine Plan Revision or Amendment

Operator: Denison Mines Corp.

Mine Name: Tony M Mine File Number: M/0170049/

Provide a detailed listing of all changes to the mining and reclamation plan that will be required as a result of this change. Individually list all maps and drawings that are to be added, replaced, or removed from the plan. Include changes of the table of contents, section of the plan, pages, or other information as needed to specifically locate, identify and revise or amend the existing Mining and Reclamation Plan. **Include page, section and drawing numbers as part of the description.**

DETAILED SCHEDULE OF CHANGES TO THE MINING AND RECLAMATION PLAN

			DESCRIPTION OF MAP, TEXT, OR MATERIALS TO BE CHANGED
☐ ADD	☒ REPLACE	☐ REMOVE	Replace the Table of Contents and text of the Notice of Intention.
☐ ADD	☒ REPLACE	☐ REMOVE	Replace the following tables: • Table 1 • Table 7
☐ ADD	☒ REPLACE	☐ REMOVE	Replace the following figures: • Figure 2 • Figure 3 • Figure 4A • Figure 4B • Figure 4C • Figure 5 • Figure 7 • Figure 10A • Figure 10B • Figure 10C
☐ ADD	☒ REPLACE	☐ REMOVE	Replace CD with Notice of Intention to Commence Large Mining Operations with the new CD provided.
☐ ADD	☒ REPLACE	☐ REMOVE	Replace the following Attachments: • Attachment A, Land Ownership • Attachment G, Surface Drainage Plan • Attachment H, Storm Water Pollution Prevention Plan • Attachment I, Spill Prevention, Control and Countermeasure Plan • Attachment L, Reclamation Bond Estimate

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I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments and obligations, herein.

Harold R. Roberts
Print Name

Sign Name, Position

5/27/2008
Date

Return to:

State of Utah
Department of Natural Resources
Division of Oil, Gas and Mining
1594 West North Temple, Suite 1210
Box 145801
Salt Lake City, Utah 84114-5801
Phone: (801) 538-5291 Fax: (801) 359-3940

FOR DOGM USE ONLY:
File #: M/ /
Approved:
Bond Adjustment: from ($)
to $

FORM MR-LMO
(Revised April 2005)

FOR DIVISION USE ONLY
File #: M / / _____
Date Received: _____
DOGM Lead: _____
Permit Fee $_____ Ck # _____

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING
1594 West North Temple Suite 1210
Box 145801
Salt Lake City, Utah 84114-5801
Telephone: (801) 538-5291 Fax: (801) 359-3940

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NOTICE OF INTENTION TO COMMENCE LARGE MINING OPERATIONS

The informational requirements in this form are based on provisions of the Mined Land Reclamation Act, Title 40-8, Utah Code Annotated 1953, General Rules and Rules of Practice and Procedures.

This form applies only to mining operations which disturb or will disturb more than five acres at any given time.

"MINING OPERATIONS" means those activities conducted on the surface of the land for the exploration for, development of, or extraction of a mineral deposit, including, but not limited to, surface mining and the surface effects of underground and in situ mining, on-site transportation, concentrating, milling, evaporation, and other primary processing.

"Mining operation" does not include: the extraction of sand, gravel, and rock aggregate; the extraction of oil and gas as defined in Chapter 6, Title 40; the extraction of geothermal steam; smelting or refining operations; off-site operations and transportation; or reconnaissance activities which will not cause significant surface resource disturbance or involve the use of mechanized earth-moving equipment such as bulldozers or backhoes.

PLEASE NOTE: *This form is to be used as a guideline in assembling the information necessary to satisfy the Large Mining Operations Notice of Intention requirements.* ***You will need extra space to provide a majority of the information requested****. Please provide the information on additional sheets and include cross-referenced page numbers as necessary. The Permittee / Operator may submit this information on an alternate form; however, the same or similar format must be used.*

TABLE OF CONTENTS

Tables

Figures

Attachments

I. Rule R647-4-104 - Operator(s), Surface and Mineral Owners

The Permittee / Operator must provide the name, address and telephone number of the individual or company who will be responsible for the proposed operation. If a company is to be listed as the Permittee / Operator, then the names of the corporate officers need to be provided.

1. **Mine Name**: Tony M Mine

2. **Name of Permittee/Operator/Applicant:** Denison Mines (USA) Corp.
Contact (Authorized Officer); Harold R. Roberts
Company ( ) Corporation (X) Partnership ( ) Individual ( )

Name of Officers:

Ron F. Hochstein	Title:	President and COO
Harold R Roberts	Title:	Executive Vice President – US Operations
David C. Frydenlund	Title:	Vice President **Regulatory Affairs** and ~~General~~ Counsel
James Anderson	Title:	Executive Vice President, Chief Financial Officer

A corporation must be registered with the State of Utah, Division of Corporations. Are you currently registered to do business in the State of Utah? Yes X No

Business License # 13517440143

Registered Agent (as identified on your business license): CT Corporation System
Address: 50 West Broadway, 8th Floor
Salt Lake City, Utah 84101-2006
Phone: (801) 364-5101 Fax: (801) 359-0388

3. **Permanent Address**: 1050 17th Street, Suite 950
Denver, CO 80265
Phone: (303) 628-7798 *Fax:* (303) 389-4125

4. **Company Representative** *(or designated operator):*

Name: Harold R. Roberts
Title: Executive Vice President – US Operations
Address: Same as Number 3
Phone: _____ Fax: _____

5. **Location of Operation**:
County Garfield (see Figures 1 and 2 and Attachment A for locations)

_____ *1/4 of* _____ *1/4, Section:* _____ *Township:* _____ *Range:* _____
_____ *1/4 of* _____ *1/4, Section:* _____ *Township:* _____ *Range:* _____
_____ *1/4 of* _____ *1/4, Section:* _____ *Township:* _____ *Range:* _____

The names of the surface and mineral owners for any areas which are to be impacted by mining must be provided to the Division. This list should include all private, state and federal ownership and the owners of lands immediately adjacent to the project areas.

6. **Ownership of the land surface**: Land ownership is BLM and SITLA (see Attachment A)
Private (Fee), Public Domain (BLM) **X**, *National Forest (USFS), State of Utah (SITLA)* **X**
or other:

Name: _____ *Address:* _____
Name: _____ *Address:* _____
Name: _____ *Address:* _____

7. **Owner(s) of record of the minerals to be mined**: Mineral ownership is controlled by unpatented BLM claims and a SITLA lease (see Attachment A)
Private (Fee), Public Domain (BLM) **X**, National Forest (USFS), State of Utah (SITLA) **X**
or other:

Name: _____ Address: _____
Name: _____ Address: _____
Name: _____ Address: _____
Name: _____ Address: _____

8. **BLM Lease or Project File Number(s) and/or USFS Assigned Project Number(s):**
NEPA Log Number UT-050-07-032-EA File/Serial Number UTU-80023

BLM Claim Numbers: See Attachment A

Utah State Lease Number(s): See Attachment A

Name of Lessee(s): See Attachment A

9. **Adjacent land owners:** BLM and SITLA (See Attachment A)

Name: _____ *Address:* _____
Name: _____ *Address:* _____
Name: _____ *Address:* _____
Name: _____ *Address:* _____

10. **Have the land, mineral and adjacent land owners been notified in writing?**
Yes X *No* _____

If no, why not? _____

11. **Does the Permittee / Operator have legal right to enter and conduct mining operations on the land covered by this notice?** *Yes* X *No* _____.

II. Rule R647-4-105 - Maps, Drawings & Photographs

105.1 - Base Map

A complete and correct topographic base map (or maps) with appropriate contour intervals must be submitted with this notice showing all of the items on the following checklist. The scale should be approximately 1 inch = 2,000 feet (preferably a USGS 7.5 minute series or equivalent topographic map where available). The map(s) must show the location of lands to be affected in sufficient detail to allow measurement of the proposed area of surface disturbance.

Base Map Checklist

Please check off each section to verify these features are included on the map(s) or explain why it is not applicable. Please add the map identification name or number which shows these features.

Check		Map ID
__X__ (a)	*Property boundaries of surface ownership of all lands which are to be affected by the mining operations;*	Fig. A1
__X__ (b)	*Perennial, intermittent, or ephemeral streams, springs and other bodies of water; roads, buildings, landing strips, electrical transmission lines, water wells, oil and gas pipelines, existing wells or boreholes, or other existing surface or subsurface facilities within 500 feet of the proposed mining operations;*	Fig. 3
__X__ (c)	*Proposed route of access to the mining operations from nearest publicly maintained highway (Map scale appropriate to show access);*	Fig. 2
__X__ (d)	*Known areas which have been previously impacted by mining or exploration activities within the proposed land affected;*	Fig. 3
__X__ (e)	*Areas proposed to be disturbed or reclaimed over the life of the project or other suitable time period.*	Fig. 3

105.2 - Surface Facilities Map

Surface Facilities Map Checklist

Surface facilities maps should be provided at a scale of not less than 1" = 500'.

Please check off each section to verify these features are included on the map(s) or explain why it is not applicable. Please add the map identification name or number which shows these features.

Check		Map ID
X (a)	*Proposed surface facilities, including but not limited to: buildings, stationary mining/processing equipment, roads, utilities, power lines, proposed drainage control structures, and the location of topsoil storage areas, overburden/waste dumps, tailings or processed waste facilities, disposal areas for overburden, solid and liquid wastes, and wastewater discharge treatment and containment facilities;*	Figs. 4A, B, & C – 7
X (b)	*A border clearly outlining the extent of the surface area proposed to be affected by mining operations, and the number of acres proposed to be affected;*	Figs. 4A, B, & C – 7
X (c)	*The location of known test borings, pits, or core holes.*	Fig. 6

105.3 - Additional Maps

Reclamation Treatments Map Checklist

Please check off each section to verify these features are included on the map(s) or explain why it is not applicable. Please add the map identification name or number which shows these features.

Check		Map ID
X (a)	*Areas of the site to receive various reclamation treatments shaded, cross hatched or color coded to identify which reclamation treatments will be applied. Areas would include: buildings, stationary mining/processing equipment, roads, utilities, proposed drainage improvements or reconstruction, and sediment control structures, topsoil storage areas, waste dumps, tailings or processed waste facilities, disposal areas for overburden, solid and liquid wastes, ponds, and wastewater discharge, treatment and containment facilities. Reclamation treatments may include ripping, regrading, replacing soil, fertilizing, mulching, broadcast seeding, drill seeding, and hydro seeding:*	Figs. 10A, B & C
X (b)	*A border clearly outlining the extent of the area to be reclaimed after mining, the number of acres disturbed, and the number of acres proposed for reclamation:*	Figs. 10A, B & C
____ (c)	*Areas disturbed by this operation which are included in a request for a variance from the reclamation standards:*	~~Figs. 10B & 10C~~
____ (d)	*Highwalls which are proposed to remain steeper than 45 degrees and slopes which are proposed to remain steeper than 3 horizontal : 1 vertical:*	~~Figs. 10B & 10C~~

Note: Areas included in sections c & d will need to be referenced in the variance request section. Please shade or color code these areas on this map.

Additional maps and cross sections may be required in accordance with Rule R647-4-105.3. Design drawings and typical cross-sections for each tailings pond, sediment pond, or other major drainage control structures must also be included.

Maps showing cross sections of the waste rock area (WRA) and the evaporation pond are presented in Figures 8 and 9, respectively.

III. Rule R647-4-106 - Operation Plan

106.1 - Mineral(s) to be mined: Uranium/Vanadium

106.2 - Type of Operation Conducted:

Describe the typical methods and procedures to be used in mining operations, on-site processing and concurrent reclamation. Include equipment descriptions where appropriate.

Denison Mines (USA) Corp. ("DUSA") plans to reopen the Tony M Mine, an underground uranium mine that was previously operated by Plateau Resources. The mine was developed in 1977 and operated into the early 1980s when it was placed on standby due to low uranium prices. The Tony M Mine was reclaimed in stages between 1995 and 2003.

As shown on Figure 1, the Tony M Mine is situated on the south flank of the Henry Mountains in Garfield County, Utah. The mine is located approximately 50 miles south of Hanksville and 15 miles north of Bullfrog Marina. The main access road to the mine is via six miles of all-weather county road proceeding 1.5 miles west from Utah Highway 276 and then 4.5 miles north through Shootaring Canyon as shown on Figure 2.

Figure 2 shows the existing workings, identified ore deposit, and potential future production and ventilation holes. DUSA plans to reopen the mine using a phased approach. Phase 1 consists of reconstructing the surface facilities and further developing the underground workings utilizing the existing declines. Phases 2 and 3 consist of developing the full northern extent of the ore deposit, which will require construction of production shafts and additional roads and surface facilities. Phases 2 and 3 are contingent on the Phase 1 results and are not included in this Notice of Intent/Plan of Operations (NOI/PO).

During Phase 1, the mine is expected to initially employ approximately 10 to 20 miners and support personnel to rehabilitate and further develop the main declines and then expand to 60 to 70 employees during full production. Depending on market conditions and production rates, Phase 1 is expected to start in second quarter of 2007 and extend over a two to three-year period. Phases 2 and 3 have the potential to employ up to 300 miners and extend the mine life to 25-years or more.

This NOI/PO addresses proposed Phase 1 activities including rehabilitation of the existing mine workings, extension of the underground declines and laterals further to the north, reestablishment of the mine ventilation and dewatering systems, and construction of mine buildings and related surface facilities. In addition, two existing ore stockpiles, left onsite by the former operator, will be removed and hauled to the White Mesa Mill near Blanding, Utah. These proposed activities, with a few minor exceptions, are limited to those surface areas that were previously disturbed and reclaimed by the former operator. No concurrent reclamation is proposed during Phase 1, as all of the surface facilities are needed to support potential Phase 2 and 3 mine operations. Areas of proposed Phase 1 surface disturbance are described below and delineated in Table 1 and Figures 3, 4A, 4B, and 4C.

Underground Mine Plan

The main decline system, shown on Figure 3, consists of two eight-foot high by 12-foot wide parallel declines spaced forty feet apart. The declines currently extend approximately 10,000 feet into the ore body at a nominal three percent dip. Laterals were also developed at right angles to the main declines to establish the ventilation system and emergency access routes. The area of existing development

averages about 400 feet below the ground surface with maximum depths of 750 feet below the ground surface in the northern end of the mine. The lower, northern portions of the two declines are flooded (see water boundary on Figure 3) and will likely require extensive rehabilitation in some areas.

The primary focus of Phase 1 mine development will be to rehabilitate the existing main declines and extend them further to the north. To accomplish this, the mine dewatering system will need to be reestablished by installing a pumping station at Vent Hole 4 and pumping the water to the reconstructed evaporation pond located on top of the mesa. The water will be pumped through six-inch diameter steel and HDPE pipe at rates up to 200 gallons per minute (gpm). Exhaust fans will be also be reinstalled in Vent Holes 1, 3, 4, 5, and 6 to establish positive ventilation. Additional ventilation will be provided by installing Vent Holes 7, ~~and~~ 8, **and 9** as mine development extends northward.

The mine will be developed to ultimately support an ore production rate of approximately 10,000 tons per month. Eight-foot high by twelve-foot wide laterals will be driven to the east and west as the declines are advanced in a northerly direction. The laterals will be driven through known ore-bearing zones to provide access for production mining. The laterals also provide access for geologic mapping, long-hole drilling, rib scanning, and collecting samples. This geologic data will be used to develop detailed mine planning and stope development for each lateral.

The ore will be mined using a modified room-and-pillar system. This mining method is a common method for mining in uranium-bearing sandstone and is designed to follow the irregular configuration of the individual ore bodies. The ore seams vary in height with an average seam thickness of approximately four to five feet. The waste/ore ratio also varies depending on the thickness of splits within the ore seams. A typical equipment list for the underground operations is presented in the upper portion of Table 2.

Jumbo drills operating on compressed air will be utilized to drill the blast holes and rock-bolt holes in the declines and laterals. Air-jacklegs will be utilized in production areas. All blasting operations will be conducted in accordance with MSHA regulations (30 CFR Parts 56 and 57). Blast holes will be loaded with an electric blasting cap, chemical booster, and a mixture of ammonium nitrate and fuel oil (ANFO) prills. The blasts will be initiated electronically with the hole pattern, firing sequence, and delays designed to allow for optimum breakage. Explosives and detonators will be stored in underground magazines and transported from the magazines to the working face in accordance with MSHA regulations (30 CFR Part 56 and 27 CFR Part 55).

The ore and waste rock will be mucked out using low-profile diesel loaders. Depending on the size of the opening, the loaders will vary in capacity from two to five cubic yards. Ore will be hauled to the surface using low-profile diesel haul trucks with capacities ranging from two to ten tons. During initial decline and lateral development, the waste rock will be hauled to the surface and placed in the waste rock disposal area. Waste produced during subsequent development and production will be disposed of both on the surface and underground in mined out areas.

Roof support will consist of metal roof mats anchored into the roof using five to eight-foot-long mechanical split-set roof bolts. Bolting will be performed as necessary with the spacing varying according to roof conditions and the size of the opening. The size of the mine openings will depend on roof conditions, but will typically be 14-feet or less in width based on the experience of similar mining operations conducted in the same formation. Ten-foot-long mats will be installed diagonally on the ribs when additional rib support is required.

The underground area will also include maintenance and storage areas. Routine maintenance and

minor repairs will generally be done underground with more extensive repairs and maintenance completed in the surface shop. Roof support materials, blasting supplies, lubricants, and the smaller and more commonly used equipment parts will be stored in designated locations underground. These locations are expected to change as the mine workings are advanced.

Surface Facilities

The proposed surface facilities are shown on Figures 4A, 4B and 4C. A surface equipment list is presented in the lower portion of Table 2. There will be no processing activities on site as all the ore will be transported to the White Mesa Mill at Blanding, Utah. Figures 4A and 5 shows the portal area where the main support facilities are located. These facilities include the following.

- waste rock area (WRA)
- ore slots and the ore stockpile area (OSA)
- topsoil stockpile (TS) areas
- existing ore stockpiles (2) on Section 16
- surface drainage control structures
- fuel and oil storage areas
- mine offices and dry
- maintenance shop and warehouse
- designated parking areas and storage yards
- mine access roads and pads
- electrical generators
- air compressor station
- well house
- septic system
- solid waste storage (trash, scrap metal, batteries)
- propane heating system

Figure 6 shows the evaporation pond area where mine water will be disposed and evaporated. Figures 4B and 4C show the access roads and ventilation shafts in the surrounding area. The facilities shown on these maps include:

- evaporation pond
- waterline corridor
- vent holes (existing and proposed)
- pond and vent hole access roads

Minor changes may be made to the proposed layouts during construction; however, construction activities, unless otherwise noted, will be confined to the previously disturbed and reclaimed areas of the project site and outside of surface drainages. Some of these facilities, such as the reopening of reclaimed secondary roads and vent holes, were approved under a previously submitted exploration plan. Each of the above referenced facilities is described below.

Waste Rock Area - The waste rock area (WRA) will be located southwest of the portal entrance in the same position as the former WRA, which has been reclaimed. The waste will be placed using top dumping and end dumping methods to create a two-bench structure with maximum bench heights of 35 feet. Waste rock slopes will be at the angle of repose (approximately 1.5 Horizonal:1 Vertical) during active mining operations. The WRA, with a capacity of 280,000 tons of waste rock, has been designed to contain the maximum volume of waste generated during Phase 1 of the operation (i.e., no underground waste disposal is assumed for Phase 1). See Sections 106.4 and 106.9 for information on

waste rock characterization and the design of the WRA, respectively.

Ore Slots and Ore Stockpile Area – Ore will typically be end dumped directly into the ore slots located in front of the portal entrance. The ore slots will have a concrete foundation and base with steel sides. The ore will then be loaded using a front end loader into 22-ton, over-the-road haul trucks for transportation to the mill. Ore transportation will be limited to weekdays with no ore being shipped on weekends or holidays. The truck beds will be covered with tarps to prevent fugitive dust. If the ore cannot be shipped immediately to the mill, the front end loader will place the ore in nearby stockpiles within the Ore Stockpile Area (OSA, see Figure 5). See Section 106.9 for additional information on sizing of ore stockpiles.

Topsoil Stockpile Areas – The mine area was disturbed by historic mining and exploration activities that occurred prior to the implementation of state and federal reclamation laws. As a result, very little topsoil was salvaged prior to initial mine development and the majority of the mine site was later reclaimed using the soils and waste rock that existed on the disturbed area at the time of reclamation. Figure 7 shows the measured thickness of topsoil in the portal area. All of the available topsoil will be stripped prior to disturbing an area. The former waste rock disposal area has the lowest percentage of vegetative cover because the waste rock, which was used as the seed bed, is a relatively poor growth media. The upper six inches of growth media from the reclaimed waste rock disposal will be stockpiled separately in **the southwest section of the** Topsoil Stockpiles ~~2A and 2B~~ (**TS** ~~2A and TS-2B~~) as shown on Figure 5. **The** TS-~~1~~ will **also** be used for stockpiling native **top**soils. ~~Additional topsoil stockpiles include TS-3, TS-4, and TS-5 in the main facilities area (see Figure 6).~~ Sections 106.5 and 106.6 provide additional information on topsoil stripping and stockpiling.

Existing Ore Stockpile Areas - Four existing ore stockpiles, which were previously reclaimed, were left onsite by the previous mine owner. The stockpiles reside on Section 16, T35S, R11E, which is owned by the State of Utah and administered by the School and Institutional Trust Lands Administration. DUSA assumed reclamation responsibility for the two northern ore stockpiles in January 2008 (existing ore stockpiles, see Figure 4A). DUSA plans to sample these two stockpiles and if sufficient uranium content is confirmed, a front end loader will be used to excavate the piles. All ore that is economically viable will be taken to the White Mesa Mill near Blanding, Utah; remaining material will be left in place and reclaimed. The two southern stockpiles are owned by others and excluded from this plan

The two existing ore stockpiles on Section 16 are located northeast of the portal entrance and were previously reclaimed. The northern and southern stockpiles contain approximately 6,400 and 52,100 cubic yards of material, respectively. All ore, which is economically viable, will be loaded using a front end loader into 22-ton, over-the-road haul trucks for transportation to the mill. Ore transportation will be limited to weekdays with no ore being shipped on weekends or holidays. The truck beds will be covered with tarps to prevent fugitive dust.

Surface Drainage Control Structures – Disturbances to existing drainage systems were avoided/minimized to the extent possible during the design of the surface facilities layout. Where disturbance of the existing drainage system could not be avoided, both permanent and temporary diversion channels were designed to replace the existing drainages. Permanent diversion channels were designed for the 100-year, 6-hour storm event while temporary channels were designed to handle the flow from the 25-year, 6-hour storm event. These temporary diversion structures will accommodate the runoff generated from over 98 percent of the storms expected during the potential 25-year mine life and will be maintained by the mine operator as needed.

As shown on Figure 5, a permanent catch basin and diversion channel is proposed immediately above

the WRA. This channel will divert runoff originating from above the WRA to the southwest and into an existing ephemeral drainage. The channel is designed to minimize the volume of runoff that will flow down the WRA slopes during both active mine operations and the post-reclamation period. A temporary drainage channel is also proposed along the west side of the county road. The channel is designed to capture runoff from the upslope WRA, OS, and TS areas. Channel flow will discharge into a temporary sediment basin that will, in turn, discharge into an existing ephemeral drainage. The temporary channel and basin will be backfilled during site reclamation and the natural drainage system restored. Earthen berms will be used to divert water from the surface facility area into **the** temporary sediment basin~~s~~.

As shown on Figure 6, the former dam will be reconstructed across a west to east trending ephemeral drainage located on top of the mesa. The evaporation pond created by the dam will encompass a maximum of 18.2 acres within a hydrologic basin of approximately 50.8 acres. Surface runoff from the surrounding basin will flow into the pond area. The pond is separated from the larger watershed and drainage system located west of the pond by a naturally occurring low ridgeline.

Sediment control measures including undisturbed buffer areas, sedimentation ponds, earthen berms, and straw bale barriers will also be placed downgradient from disturbed areas to minimize the volume of sediment impacting the drainage system. See Sections 107, 109.1, 109.4, and Attachments G and H for additional information on drainage control structures and sediment control during active mine operations.

Fuel and Oil Storage Areas - Diesel fuel, gasoline, and other petroleum products will be stored on-site in tanks, drums, and smaller containers. The fueling station, shown on Figure 5, will store approximately 10~~5~~,000 gallons of diesel fuel **in two tanks** and 500 gallons of gasoline. **The tanks will be double-walled.** The fueling station containment area will be surrounded with soil berms and covered with a plastic liner to contain any fuel spills or leaks. The plastic liner will be covered with a protective layer of soil and gravel. The berms will be established at the height necessary to contain the total volume of the largest tank within the containment area plus an additional ten percent. The fueling areas will be sloped so that any spills during equipment fueling or fuel delivery to the site will flow into the containment area.

Diesel fuel for the generators (see Figure 5) will be supplied by **two** 850 ~~or 1,700~~ gallon tanks built into the skid-mounted installation. ~~A separate tank of approximately~~ **The two aforementioned** 5,000-gallon~~s~~ **diesel tanks** will provide additional fuel storage and will feed into the skid-mounted tanks. The generator fuel tanks will be located within a bermed and lined area similar to the secondary containment for the fuel station.

Up to 2,000 gallons of antifreeze and oil products (i.e., motor oil, hydraulic oil, gear oil, and used oil) will be stored at the maintenance shop within the shop floor and used-oil storage area. With the exception of the used oil tank, these products will typically be stored in smaller tanks of less than 100 gallons, drums, and small containers. The used oil tank will be **approximately 1,000 gallons and** will be located on a concrete pad along the outside wall of the shop. The pad will be equipped with a low wall or curbing that is designed to contain the entire contents of the tank if a leak occurs. **The containers in the shop area sit on spill-containment pallets.** Any spills in the shop area will be contained within the shop walls and the sand trap that is between the shop drain and septic system. A vendor will periodically pump the sand trap and used oil tank contents into a tanker truck, which will transport the oil to a recycling facility. See Section 107 and Attachment I for additional information on the transportation, storage, use, and spill response for petroleum products.

Mine Offices and Dry – Mobile trailers will be initially used to house the mine offices and

change/shower facilities (i.e., dry). If the mine develops as expected, these trailers may be replaced with prefabricated metal buildings constructed on four-inch-thick concrete pads as the labor force expands. Figure 5 shows the footprint of the mine offices ~~(40 feet by 24 feet)~~ and dry (**approximately 11,600 square feet** ~~40 feet by 60 feet~~) based on the maximum projected Phase 1 work force of 70 personnel. These buildings will be painted a tan or light brown color to better blend in with the surrounding natural features.

Maintenance Shop and Warehouse – A maintenance shop ~~(30 feet by 50 feet)~~ and warehouse (**approximately 15,650 square feet** ~~30 feet by 30 feet~~) will be constructed as shown on Figure 5. These facilities will consist of prefabricated metal buildings on six-inch concrete pads and will be painted tan or light brown.

Designated Parking and Storage Yards – A gravel parking area will be provided for employees and visitors adjacent to the mine offices as shown on Figure 5. A fenced storage yard (**Laydown Area** ~~Storage Yard 1~~) will be located on the west side of the county road. The yard will be used to store underground supplies (e.g., roof bolts, mats, pipe, hoses, power cable), mobile equipment, and large replacement parts.
~~A second storage yard, Storage Yard 2, has also been included in the event that additional area is needed for storage, parking, mobile trailers, or other uses.~~

Mine Access Roads and Pads – The primary road into the site is a county road that continues on to the northeast past the mine. Secondary roads will access the portals, WRA, and the buildings and storage yards as shown on Figure 5. A metal gate will be installed at the entrance to the portal area. This gate will be locked when the mine is not operating. Two access roads and small pads were previously reopened (under an approved exploration plan) to gain access to adits located in the canyon north of the main portals. These adits, which are shown on Figure 4A, are laterals that connect to the two main declines. They provide additional ventilation and emergency escapeways for the mine.

Electrical Generators – The mine is located in an area of the state where utility-supplied power is unavailable. Power for the mine site will be supplied by four generators (three primary and one backup). The generator sets will be installed in accordance with state and federal requirements including protection from impact, perimeter fencing, and appropriate warning signs. The generators will supply power to the surface buildings, air compressor station, and to the underground workings. Power will be delivered to electrical transformers underground via insulated power cables hung from roof bolts. The transformers, in turn, will supply power to the pumping system, ventilation system, and electrically powered equipment.

Air Compressor Station – During the initial phase of operations, compressed air will be supplied to the mine by diesel-powered systems. Once the electrical generators are on line, electrically-powered compressors will be installed near the generators. Three units rated at 1,200 cubic feet per minute (cfm) each will be needed for Phase 1.

Well Water System – Water for bathrooms, showers, washing equipment, and other general uses will be supplied from an existing 8-inch diameter water well using a submersible pump and buried waterlines. The water is not potable and the mine will supply bottled water for drinking purposes during the initial stage of mine rehabilitation and development. As the work force expands, a water treatment system will be installed within the dry to meet potable water standards. Non-transient, non-community water systems that supply water to 25 or more people are required, under Utah regulations, to meet potable water quality standards. Underground water needs and water for dust suppression on the mine roads will be supplied from the sump in the underground mine. Information on water rights is provided in Attachment ~~E~~**J**. DUSA is currently taking steps to transfer the water rights.

Septic System – The septic system used by the previous operator was abandoned in place at the time of mine closure and reclamation. It appears that this system can be restored and modified to accommodate sanitary wastewater disposal for the proposed buildings. A sand trap will be installed between the shop floor drains and the septic system to capture any grease or oil that might enter the drain from maintenance activities. The septic system will be pumped out, as needed, on a routine basis.

Solid Waste Storage - A roll off container for disposal of trash will be located next to the Maintenance Shop and Warehouse. The trash will be picked up on a routine basis by a service company and disposed of at an approved landfill. No landfills will be constructed on site. Scrap metal will be stored in a bin and/or on pallets near the Maintenance Shop and Warehouse until it can be picked up for recycling. Used batteries and tires will be stored in the same area and will be picked up and recycled by vendors.

Propane Heating System – Propane will be used to heat the buildings. The tank will be located in a fenced area near the buildings.

Evaporation Pond – A dam and 18-acre evaporation pond will be constructed on top of the mesa about one mile northwest of the portal area. The dam and pond will be within the footprint of the previous dam and evaporation pond. The previous dam was breached during reclamation and will have to be reconstructed using the same clay material that was removed from the breach. The majority of the clay soils used to construct the dam and clay liner were imported from a borrow area located approximately one-mile south of the pond (see Figure 2). The clay was removed as part of a lease agreement with the BLM and the borrow area was later reclaimed. Additional clay material will not be needed for construction of the Phase 1 pond; however, the borrow area may need to be reopened in the future if the pond is expanded in size during Phase 2.

The clay soils in the pond area will be reconditioned and compacted to meet the new liner specifications. An emergency overflow will be constructed on the southwest corner of the pond as shown on Figure 6. The pond will be fenced to preclude livestock, as the water is of poor quality and not suitable for drinking.

Additional information regarding the evaporation pond is provided in Sections 106.9, 109.1, and 110.2. The Dam Permit Application and the Request for Ground Water Discharge Permit by Rule are included as Attachments E and F, respectively. Information on water rights is included in Attachment E while Attachment F contains supporting information on geotechnical conditions and the expected water quality of the water discharged into the pond.

Waterline Corridor – Water will initially be pumped from the mine workings via Vent Hole 3. This water will be used to condition the clay soils used to reconstruct the dam and clay liner for the evaporation pond. A temporary water tank will be installed at Vent Hole 3 and water trucks will be filled from the tank. Once the water level has been lowered sufficiently, a permanent pumping station will be installed at Vent Hole 4. A 6-inch diameter pipe will be installed from the mine workings to the surface within Vent Hole 4 and then from there to the evaporation pond. The pipe will follow the pre-existing waterline corridor which extends approximately one-half mile from the vent hole to the pond (see Figure 6). A storage tank of approximately 5,000 gallons will be located near Vent Hole 4 to contain all of the water in the pipe in the event the system has to be shut down for repair or maintenance. The tank will be painted tan or light brown to blend in with the surrounding terrain.

The waterline will consist of high-density-polyethylene (HDPE) pipe laid on the ground surface within

an existing side-hill cut. The previously used waterline, consisting of 8-inch aluminum pipe, is buried under soil sloughage originating from above the side-hill cut. This pipe and soil will be removed as the new pipe is installed. The old pipe will be disposed of at an off-site landfill while a portion of the soil will be pushed down the hill and the remainder will be used to cover the new pipe. An ATV trail will be maintained along side the pipe to allow for periodic inspection.

Vent Holes – Vent Holes 1, 3, 4, 5, and 6 were reopened as part of a previously submitted exploration plan for the site (note: there is no Vent Hole 2). With the exception of Vent Hole 3, which is only 11-inches in diameter, the vent holes are between 60 and 72 inches in diameter. **Three** ~~Two~~ new vent holes, Vent Holes 7, ~~and~~ 8, **and 9** will be installed as the declines are advanced further to the north. The surface disturbance associated with the new vent holes will be minimal (approximately **0.73** ~~0.65~~ acre) because the vents will be of similar size to the existing vent holes and in close proximity to existing roads. Metal diffusers will be installed above each of the existing and new openings. The diffusers will be about four to five-feet tall, screened on top to prevent entry, and painted tan or light brown to blend in with the surroundings. The locations of the existing and proposed vent holes are shown on Figures 4B and 4C.

Pond and Vent Hole Access Roads – The existing access road to the evaporation pond area starts at the county road just north of Vent Hole 4 and heads south past Vent Hole 4, Vent Hole 3, the Evaporation Pond Dam, and Vent Hole 1 (see Figures 3 and 4B). This access road is located on both State of Utah and BLM managed land. An existing secondary road also accesses the evaporation pond area from the south. Sections of reclaimed roads were reconstructed as part of an approved exploration plan to access the toe of the evaporation pond dam and Vent Holes 1 and 3. The pad for Vent Hole 4 is located immediately adjacent to the State/BLM road and a separate access road is not required for this vent hole.

After its intersection with the State/BLM road, the county road continues in a northwest direction and ultimately leaves the project area. As part of the approved exploration plan, previously reclaimed roads were reconstructed to access Vent Holes 5 and 6. New roads will be constructed to access proposed Vent Holes 7, **8,** and ~~8~~**9**. Figures 3 and 4C show the existing, reconstructed, and proposed roads for these vent holes.

Temporary Closure

In the event that market conditions or other circumstances require a temporary cessation of mine operations, DUSA will provide notice to the BLM in accordance with the requirements of Part 3802.4.7, Title 43 of the Code of Federal Regulations (CFR) and to DOGM in accordance with Utah Rule R647-4-117. During non-operating periods, DUSA will maintain the buildings, drainage structures, evaporation pond, roads, and other surface facilities in a safe and environmentally acceptable condition. Underground openings, gates, and buildings will be locked to discourage unauthorized access when mine personnel are not present.

106.3 - Estimated Acreage

Acreage listed here should match areas measured off the maps provided.

Areas of actual mining:	1.5**4** (portals & vent hole areas)
Overburden/waste dumps:	7.6 (Waste Rock Area)
Ore and product stockpiles:	5.8~~3~~ (Ore and Existing Ore Stockpile Area)
Access/haul roads:	2.2 (excludes existing roads)

Associated on-site processing facilities:	0.0
Tailings disposal:	0.0
Other - Please describe:	35.24 (evap. pond, bldgs.,yards)
Total Acreage	51.8 ~~52.4~~

See Table 1 for additional details on proposed surface disturbance acreage.

106.4 - Nature of material including waste rock/overburden and estimated tonnage

Describe the typical annual amount of the ore and waste rock/overburden to be generated, in cubic yards. Where does the waste material originate? What is the nature of the overburden/wastes (general chemistry/mineralogy and description of geologic origin)? Will it be in the form of fines or coarse material? What are the typical particle size and size fractions of the waste rock?

Thickness of overburden:	100 to 1,000	ft.
Thickness of mineral deposit:	Ave. of 4 to 5	ft.
Estimated annual volume of waste rock:	45,000 to 90,000	cu. yds.
Estimated annual volume of tailings/reject materials:	0	cu. yds.
Estimated annual volume of ore mined:	50,000 to 100,000	cu. yds.

Overburden/waste description: The waste rock originates from the lowest sandstone unit of the Salt Wash Member of the Morrison Formation. The blasted sandstone waste ranges in size from fine-grained sand to about two-feet in diameter. The material on the road surface of the waste rock area tends to be finer grained as the rock readily breaks down under truck traffic. Based on field observations and soil testing of the existing, reclaimed waste rock area, the waste is not acid-generating nor does it contain mineral concentrations that are toxic to vegetation.

Note: The estimated 50,000 to 100,000 cubic yards of ore is based on the Phase 1 production rate starting at approximately 60,000 tons per year and increasing to 120,000 tons per year as the mine expands. An ore stockpile density of 90 pounds per cubic foot (lbs/ft^3) was used to convert tonnage to cubic yards. The 45,000 to 90,000 cubic yards of waste is based on an average Phase 1 waste to ore ratio of 1/1 for decline and lateral development with a WRA density of 100 lbs/ft^3. The waste to ore ratio is expected to decrease significantly during later production (i.e., 0.5 or lower) resulting in the generation of proportionately less waste.

106.5 - Existing soil types, location of plant growth material

Specific information on existing soils to be disturbed by mining will be required. General soils information may not be sufficient. Provide specific descriptions of the existing soil resources found in the area. Soil types should be identified along with depth and extent, especially those to be directly impacted by mining.

***Soils** - The plan shall include an Order 3 Soil Survey (or similar) and map. This information is needed to determine which soils are suitable for stockpiling for revegetation. This soil data may be available from the local Natural Resources Conservation Service office, or if on public lands, from the land management agency. The map needs to be of such scale that soil types can be accurately determined on the ground (see Section XII).*

(a) Each soil type to be disturbed needs to be field analyzed for the depth of soil material, volume (for stockpiling), texture (field determination), pH (field determination) (cross reference with item 106.6).

A baseline soil resources assessment was conducted of the Phase 1 project area and is included as Attachment B to this NOI/PO. The scope of work for the assessment was developed in communication with DOGM personnel. Field data collection was conducted with an approach consistent with a Soil Order III baseline soil survey necessary to meet requirements of Rules R647-4-106.5, 106.6, and 109.3 of the Utah Administrative Code. Sampling design is described in detail in the field methods section of Attachment B. The objectives of the soil resources assessment were to:

- Survey and document soil map units in the project area;
- Identify and characterize potential topsoil borrow areas; and
- Establish soil reference areas.

The soil survey was conducted concurrently with vegetation resource surveys (see Attachment C). Vegetation surveys were accomplished with the use of transects situated in distinct vegetative communities (Table 4). When vegetation transects were situated in distinct soil map units, soil physical and chemical parameters were also characterized. Sampling involved digging a soil pit to maximum soil depth, or depth to bedrock. Soil parameters evaluated in the field included determination of soil color and texture by horizon. However, excluding an O horizon within the first one to two inches, all soils exhibited no evident horizonation and were assumed to be A horizons throughout. Depth to bedrock, suitable for salvage was determined when possible. Field pH was also measured; however, the data proved inconclusive and inaccurate and is therefore not presented.

The Phase 1 project area includes five major soil map units, as determined by the U.S. Department of Agriculture, Soil Conservation Service (USDA SCS): Badland-Rock Outcrop Complex, Glenberg Series, Chipeta-Badland complex, Farb-Rock Outcrop Complex, and Rizno, Warm-Rock Outcrop Complex (See soil map in Attachment B). These broad soil map units are defined as unique natural landscapes and may consist of one or more major and/or minor taxonomic soil classifications. Soil map units are based on landscape-scale similarities observed in parent material, general soil characteristics, elevation, precipitation, position within the landscape, and vegetation, among others. Finer variations in these parameters further define these broad map units into a mosaic of taxonomic classifications.

The project area has been impacted extensively by past mining activities, both historic and more recent. Mining activity has resulted in the creation of soil types that are different in character from the surrounding mapped units. These mining-related soil types include the sandy waste rock dump and low-grade ore stockpiles located in the portal area and the clay material used to construct the dam and evaporation pond liner. The majority of the clay material originated from a borrow area located about 6,300 feet south of the evaporation pond. These sand and clay soils were reclaimed in-place by the previous mine operator without benefit of native topsoil. The waste rock area and the evaporation pond and dam will be redisturbed by the proposed project. The reclaimed ore stockpiles are not under DUSA control and will be left undisturbed. These piles are shown on Figure 4A.

Two of the five major soil units identified will not be impacted by proposed mining operations. These units include the Farb-Rock Outcrop Complex in the extreme northwest corner of the Phase 1 project area and the Rizno, Warm-Rock Outcrop Complex in the southeast corner of the project area. Impacts to the Chipeta-Badland Complex will be limited to proposed Vent Holes 8 **and 9** and ~~its~~ **their** access road, which will disturb less than one-half acre of land. Detailed information for these three soil units is provided in Attachment B. The portal area and existing ore stockpiles are located

within the Badland-Rock Outcrop Complex while the evaporation pond area and all the remaining vent holes are located in the Glenberg Series. A summary of these two soil units and the existing mining-related soil types follow.

Badland-Rock Outcrop Complex

Badland-rock outcrop complex is defined as exhibiting a composition of approximately 70 percent badland, 15 percent rock outcrop, and 15 percent soils. The soils in this map unit are recognized as approximately five percent Chipeta silty clay, five percent Moenkopie fine sandy loam, and five percent Neskahi Series fine sandy loam. These soils are found primarily in drainageways. Badlands are described as steep or very steep, commonly nonstony, barren land dissected by many intermittent drainage channels. Badland landforms are most common in semiarid and arid regions where streams are entrenched in soft geologic material. Runoff potential is very high, and geologic erosion is active.

Several soil profiles were observed within this map unit and soil samples were collected at 12 vegetative transect locations. Physical and chemical parameters of this map unit and subunits are summarized in Table 3. 93,747 acres of the Badland-Rock outcrop complex occur in Garfield County, Utah. Including areas impacted by previous mining activity, 302.4 acres of this soil map unit occur within the southern third of the project area.

The Neskahi Family Subunit represents the primary soil resource within the general portal area. The Neskahi Series consists of very deep, well-drained, moderately permeable soils on floodplains. These soils formed in alluvium derived dominantly from sandstone and shale. The Neskahi Series is a coarse-loamy, mixed (calcareous), mesic Typic Torrifluvent. Sample points 9, 12, 14 and 15, and 17-22 all lie within this subunit of the Badland-Rock outcrop complex. The Neskahi Series subunit occupies 40.5 acres of the Shootaring Creek canyon bottom within the project area.

The remaining portion of the portal area is dominated by the characteristic Badland-Rock outcrop complex soil map unit that constitutes the steep canyon walls, and the benches and mesas associated with those walls. The walls, when topographically capable of holding soils, are composed of a mosaic of Chipeta and Moenkopie soils depending upon the resident parent material (shale vs. sandstone, respectively). The area totals approximately 262 acres within the project area.

Glenberg Series

A total of 1,639 acres of the Glenberg Series occur in Garfield County, Utah. Approximately 979 acres occur within the project area on the mesa west of Shootaring Canyon. The Glenberg Series is associated with the drainages and floodplains of intermittent streams and rivers. Typically these soils are very deep, moderately permeable, well-drained alluvium formed from sandstone and shale. Occurring at elevations ranging from 4,700 to 5,500 feet above sea level, slopes are very gently sloping (level to three percent). Within this soil map unit are areas of Yarts fine sandy loam, Chipeta silty clay, badland, and rock outcrop.

Those areas within the Glenberg Series associated with intermittent stream systems, and therefore fluvial energy, are composed primarily of soils associated with the deep and very deep soils of the Yarts Series. The Yarts Series consists of deep and very deep, well-drained, moderately rapidly permeable soils on benches and alluvial fans and in valleys. Taxonomically, it is defined as a coarse-loamy, mixed (calcareous), mesic Ustic Torriorthent. The Yarts Series, due to its thickness and potential reclamation value, represents the primary soil resource within the evaporation pond and vent hole areas

The remainder of the soils are of the Chipeta series, which is associated with the slopes, benches, and mesas of the Badlands and outcrops. The Chipeta series consists of shallow, well-drained slowly

permeable soils. These soils formed in residuum and colluvium derived from shale. Taxonomically it is classified as a clayey, mixed (calcareous), mesic, shallow Typic Torriorthent. The evaporation pond dam and liner were constructed with Chipeta series material.

Seven sample points were sampled within this map-unit near the evaporation pond. Three additional points were sampled within the dam and evaporation pond footprint (see Mining-Related Soil Units below). The physical and chemical parameters of the Glenberg Series map unit are presented in Table 3. Due to its resource value, the fine sandy loams of the Yarts Series were determined to be deserving of being recognized as a subunit. Four areas across the project area were identified as the Yarts Series subunit. These areas are principally associated with alluvial fans situated at the bottoms of steeper slopes and with intermittent stream drainages. Sample points 1, 2, 3, 4, and 29 were situated within this subunit collectively occupying 278.6 acres within the project area.

Mining-Related Soil Units

A portion of the Badland-rock Outcrop Complex, located in the immediate vicinity of the mine portals, consists of a white, sandy waste rock. The area is situated within a narrowing floodplain/canyon bottom that was likely, the Neskahi Series subunit prior to previous mining operations. Composite samples (WRF-1, WRF-2 and WRF-3) were taken in this location to evaluate the physical and chemical soil properties of the waste rock area (see Table 3). The soil material within this area is not consistent with Neskahi Series characteristics and is representative of waste rock and excavated material produced from the former underground operation.

Within the canyon bottom and project area boundary, there are also five reclaimed, low-grade ore stockpiles (i.e., two northeast of the portal area and three south of the portal area). The low-grade ore material is similar in composition to the waste rock, but has a greenish-gray color due to alteration. The reclaimed stockpiles, like the waste rock area, likely overlay soils of the Neskahi Series subunit. Samples 7-rec and LGO-1 were collected from the stockpile located furthest to the north. Three vegetative transects were also completed in this vicinity.

The evaporation pond and dam are predominantly made up of clay material imported from a borrow area located approximately 6,300 feet south of the pond. These clay soils are from the Chipeta Series subunit of the Glenberg Series. Sample points 5, 6, and RES-SP1 were used to characterize and identify this subunit.

(b) Where there are problem soil areas (as determined from the field examination) laboratory analysis may be necessary. Soil samples to be sent to the laboratory for analysis need to be about one quart in size, properly labeled, and in plastic bags. Each of the soil horizons on some sites may need to be sampled. Soil sample locations need to be shown on the soils map. Soil analysis for these samples should include: texture, pH, Ec (conductivity), CEC (Cation Exchange Capacity), SAR, % Organic Matter, Total N, Available Phosphorus (as P_2O_5), Potassium (as K_2O), and acid/base potential.

Soil samples were collected for laboratory analysis from the three soil major soil map units that will be impacted by mining operations (i.e., Badland-Rock Outcrop Complex, Glenberg Series, and the Chipeta-Badland Complex). Samples were also collected from the reclaimed waste rock area, ore stockpiles, and the evaporation pond and dam area. The samples were analyzed by Inter-Mountain Laboratories (IML) of Sheridan, Wyoming. Laboratory parameters analyzed included; pH, electrical conductivity, calcium, magnesium, sodium, potassium, soil adsorption ratio, cation exchange capacity, percent organic matter, total kjeldahl nitrogen, available nitrate, phosphorus, and potassium, composition of sand, silt, and clay, texture, percent coarse fragments, percent total sulfur,

neutralization potential and acid/base potential. A complete list of analytical results is presented in Attachment B.

Comparison of soil chemistry mean parameters from the Neskahi and Yarts soil map subunits, and the waste rock material presents many differences. All three soils exhibit a narrow range of neutral to basic soil pH (7.4 - 8.2) with the Yarts being the most basic followed by the Neskahi and the waste rock material, respectively. The waste rock material exhibited the highest measures of electrical conductivity at 2.18 dS/m and the lowest percentage of organic matter at 0.93 (as compared to 2.59 and 3.77 percent for the Neskahi and Yarts, respectively). The waste rock material also exhibited a higher percentage of sand in its texture. The Neskahi soil was most limited by its nitrogen content (0.96 ppm) and the Yarts by its phosphorus content (0.87 ppm), while the reclaimed soils demonstrated a well-balanced nitrogen:phosphorus signature. The waste rock material is more limited in available potassium (54.23 ppm) than the native soils while exhibiting higher concentrations of calcium and magnesium (18.04 and 5.48 meq/L, respectively). In all other parameters considered, each soil exhibited results similar in value and nature. The functional value of the waste rock material is most limited by its low percentage of organic matter and its higher sand composition. The Neskahi may be possibly limited by it low nitrogen content and the Yarts by its low phosphorus content and potassium concentration (0.04 meq/L).

106.6 - Plan for protecting and redepositing existing soils

Thickness of soil material to be salvaged and stockpiled: Approximately 7 to 15 inches
Area from which soil material can be salvaged: (show on map) Approximately 7.3 ~~11.4~~ acres
Volume of soil to be stockpiled: Approximately ~~90~~4,500 cu. yds.
(cross reference with item 106.5 (a))

Describe how topsoil or subsoil material will be removed, stockpiled and protected.

Soils Available for Salvage and Potential Salvageable Quantities

The primary areas that will be disturbed within the project area (i.e., portal and evaporation pond areas) can be broadly defined by two major landforms and their associated soils. The first group consists of Badlands, Rock Outcrops, benches, and mesas and the generally shallow soils associated with those landforms. The second group consists of deep, well-drained alluvial soils that originated from the erosion of the first group over time. The alluvial soils, which are made up of the Neskahi Series subunit of the Badland-Rock Outcrop complex, and the Yarts fine sandy loam subunit of the Glenberg Series, are good candidates for topsoil salvage and borrow due to their greater thickness.

Figure 7 presents the topsoil-stripping map for the portal area. As shown, the **topsoil in the** south**ern** portion of the proposed disturbed area **was washed away during a flood, therefore, there is no** ~~has between 10 and 15 inches of~~ strippable soil **in that area.**, ~~and t~~**T**he central portion has between 5 and 10 inches of strippable soils. Most of these soils are of the Neskahi Series. If **an** average soil depth~~s~~ of ~~12.5 inches and~~ 7.5 inches **is** ~~are~~ assumed over the **7.3** ~~11.4~~-acre area of native soils, the volume of soil available for stripping and stockpiling would total **7,400** ~~16,000~~ bank cubic yards (bcy). However, topsoil will not be stripped from buffer areas next to the drainages~~, the leach field,~~ or the topsoil stockpile area~~s~~. Soil stripping efficiencies will also be relatively low in those areas where the soil is thinner or intermixed with gravel and rock. Given these considerations, a strippable volume of approximately ~~9,000~~ **4,500** bcy is projected for the area. These soils will be placed in **the** Topsoil Stockpiles ~~(~~TS~~)~~ ~~1 and TS-3, 4, and 5~~ (see Figure 5). **The** ~~S~~stockpile height~~s~~ **was** ~~were~~ driven by land area limitations and ~~TS-1 and TS-2B~~ will have a maximum height of about 10 feet ~~due to land area limitations. TS-2A and TS-3 can be 8 feet, and TS-4 and TS-5 will be 6 feet~~.

The upper six inches of soil from the reclaimed waste rock area will also be salvaged and placed in **the southwest portion of the** Topsoil Stockpiles ~~TS-2A and TS-2B (see Figure 5) at a maximum height of 8 and 10 feet, respectively~~. The revegetated waste rock material is not as good a resource as the native soils; however it does support vegetation, as evidenced by the revegetation success to date. The volume of soil available for stripping and stockpiling from the reclaimed 11-acre waste rock area is also estimated to be 9,000 bcy.

The clay liner will be reconstructed by ripping, moisture conditioning, and compacting the underlying clay materials. The clay material, although containing vegetation, was determined to be unsuitable for future topsoil use because Saltcedar (*tamarix ramosissima*) (a.k.a., tamarisk) is the predominant vegetative species in the evaporation pond area. Tamarisk is an undesirable, non-native species that has invaded large portions of Utah and surrounding states.

The Yarts fine sandy loam subunit of the Glenberg Series will be impacted to only a minor degree along the edge of the evaporation pond. The Yarts subunit is present within an ephemeral drainage system located north, south and west of the pond (see Attachment B). This area may be suitable for borrowing topsoil, although gravel levels are relatively high and creation of borrow areas could environmentally impact the drainage area. The area south of the evaporation pond (sample points 3, 4, and 29) is associated with a south-flowing intermittent drainage and exhibits the deepest soils. The mean depth to bedrock is 12 inches and the area is 22 acres in size. DUSA does not propose to borrow soils from undisturbed areas during Phase 1 of the proposed operations; however, if the evaporation pond is expanded during later phases of the project, these soils would be stripped and stockpiled.

Topsoil Stockpiles~~s~~

Most soil stripping will be performed using a tracked dozer, although a front-end loader and/or motor grader may also be used. **The** ~~S~~stockpiles~~s~~ will be approximately ~~range from six to~~ ten feet in depth. Equipment will not be allowed to cross over the piles~~s~~ so that compaction is minimized. The topsoil pile location~~s~~, shown on Figures 5 and 6, **was** ~~were~~ placed outside of drainage areas to minimize erosion losses.

The ~~T~~topsoil piles~~s~~ will be contoured, furrowed, and broadcast seeded in late fall with the Greasewood Reclamation Seed Mix (see Table 5). In the event that vegetation is difficult to establish, the stockpiles~~s~~ will be blended to match the surrounding terrain as much as possible. Please refer to Section 110.5 for specific revegetation methods that will be used. To promote soil viability for postmine redistribution, the waste rock salvaged soils ~~in TS-2A and TS-2B~~ will also be pretreated with a mycorrhizal fungi inoculum to promote soil viability. ~~Though proposed as a postmine treatment (See Section 110.5), it may prove beneficial to establish the inoculum during the creation of the TS-2A and TS-2B topsoil storage piles.~~ Based on the required application rates (60 pounds per acre), approximately 45 pounds of mycorrhizal fungi will be applied **to** ~~between each of~~ the waste rock **area topsoil** ~~storage piles~~ to allow for propagation of viable soil material for later redistribution for postmine reclamation. ~~Stockpiles TS-2A and TS-2B will be ripped to a depth of 18 inches and the mycorrhizal fungi will be broadcast in a dry form prior to furrowing and broadcast seeding.~~

Sediment controls (i.e. grass buffer areas, earthen berms, straw bales, etc.) will be installed and maintained, as necessary, to prevent surface run-off from mine operational areas and roads from intersecting the topsoil piles~~s~~ within the surface facilities area. Vegetation success on the stockpiles~~s~~ will be monitored and **the** stockpiles~~s~~ will be reseeded where vegetation is sparse. Best Management Practices for preserving soil quality and enhancing soil material for later reclamation and post-mine bond release success will be incorporated into interim topsoil management as they become available during the life of the operation.

The water levels in the pond are not anticipated to fluctuate, specifically they will not decrease; it is more likely that the pond level will increase until it is no longer in use. Based on this information, it is not anticipated that the sediments will be exposed to the air until mining activities cease. Due to the continued saturation of pond sediments, airborne dust is not considered to pose a risk to the public or the environment. DUSA recognizes the potential for mine water to contaminate sediments in the pond. Samples of the existing pond liner will be taken prior to the start of operations to establish baseline conditions of the soils within the pond area. DUSA will sample pond sediments following mining activities. These samples will be analyzed for metals and radionuclides, as well as sulfates and selenium. Based on the results of the pond sediment analysis following mining activities and their comparison to baseline conditions at the pond site, DUSA will remove contaminated sediments and place them into the underground mine workings. This commitment will eliminate concerns about remaining contaminated sediments and their potential to become air born.

106.7 - Existing vegetative communities to establish revegetation success

Vegetation *- The Permittee / Operator is required to return the land to a useful condition and reestablish at least 70 percent of the premining vegetation ground cover.*

Provide the Division with a description of the plant communities growing onsite and the percent vegetation cover for each plant community located on the site. Describe the methodology used to obtain these values.

The percent ground cover is determined by sampling the vegetation type(s) on the areas to be mined (see Section XII for suggested sampling methods).

(a) *Vegetation Survey - The following information needs to be completed based upon the vegetation survey: sampling method used, number of transects, ground cover percentages, vegetation community at the site, vegetation community types, predominant perennial species of vegetation growing in each community type.*

Vegetation community mapping was conducted in accordance with UCA Rule 647-4-106.7. The BLM Richfield Field Office Resource Management Plan Management Situation Analysis (2004) identifies ten general vegetation communities and fourteen vegetation cover types that occur within the field office boundaries. Utah Gap Analysis Program (GAP) data indicates that the project area is populated entirely by desert scrub and grassland vegetation communities. Aerial photography was used and field surveys were conducted to map the vegetation cover types within the Phase 1 project area. Cover types in the project area were labeled and described to be consistent with BLM literature.

To obtain parameters of vegetative composition, 25-foot linear transects were randomly laid out in each major vegetation type (Table 4). The line-intercept method was used to measure vegetative density, cover, and richness and the extent of interstitial space and disturbance. When a cover type was encountered along the transect, the length of its interception was recorded. When there was species overlap, both species were noted, however the canopy species was used for data analysis. Non-vascular vegetation, such as lichens and bryophytes, were also measured. Non-vegetative cover types, such as litter, coarse woody debris, and rocks greater than 10 centimeters were recorded. Disturbances such as domestic trampling (i.e., hoofprints) and off-highway vehicle tire tracks were also measured and recorded.

Sixty-~~four~~seven (674) systematically placed and randomly oriented transects were established within the project area in June 2006. The line intercept method was utilized to sample vegetation and

surface cover at each of the 64 sites. Three distinct vegetation cover types/communities were determined, including a greasewood vegetation cover type, the predominant blackbrush vegetation cover type, and salt desert shrub vegetation cover type (Table 4). Two general areas of mine disturbance and reclamation were also delineated. They include the reclaimed cover type (assumed to naturally have been a greasewood vegetation cover type) over the former waste rock area and low-grade stockpiles and the ground cover associated with the evaporation pond area.

Four permanent transects were also established in locations outside of the project area. The locations were intended to be characteristic of vegetative cover types occurring within undisturbed areas in the project area. Two of these reference areas were established within the blackbrush cover type associated with the Glenberg soil unit and two were established just south of the project area along the Shootaring Creek floodplain in the greasewood vegetation cover type. The vegetation baseline report, included as Attachment C, provides additional information and details regarding the 4 permanent transects, the 674 temporary transects, and the vegetation communities within the Phase 1 project area.

(b) Photographs - The Permittee / Operator may submit photographs (prints) of the site to show existing vegetation conditions. These photographs should show the general appearance and condition of the area to be affected and may be utilized for comparison upon reclamation of the site. Photographs should be clearly marked as to the location, orientation and the date they were taken.

Photographs of all vegetation survey areas are included in the vegetation baseline reports as Attachment C.

106.8 - Depth to groundwater, overburden material & geologic setting

Describe the approximate depth to groundwater in the vicinity of the operation based on the completion of any monitoring or water wells in the area. Please show the location of these wells on the base map.

Depth to groundwater *Approximately 400* *ft.*

The depth to groundwater at Vent Hole 4 (see Figures 4B and 6) was measured at 367 feet on August 11, 2006. Vent Hole 4 is located on top of the mesa near the evaporation pond at an approximate surface elevation of 4,800 feet. This unconfined aquifer is located in the Salt Wash Member of the Morrison Formation, which is the formation being mined. As shown on Figure 3, this vent hole is located very close to the "Underground Water Boundary" that divides the flooded northern portion of the mine from the dry southern portion of the mine. Based on the August 2006 measurement, the water elevation at Vent Hole 4 is approximately 4,433 feet.

The mine water well is reported to be 500 feet deep and completed in the Entrada Sandstone Formation, which underlies the Morrison and Summerville Formations. The water well is located near the gate to the mine portal area (see well house on Figure 6) at an approximate surface elevation of 4,500 feet. An attempt was made to measure the water elevation in the well on August 11, 2006; however, the probe bottomed out at 150 feet without recording a water elevation. The probe may have hung up on the submersible pump. The 500-foot depth of the well corresponds to a bottom elevation of 4,000 feet. Information reviewed in Attachment D indicates that the well is completed in a confined aquifer and that a static water level of 120 feet below the ground surface was previously recorded.

Provide a narrative description of the geology of the area and/or a geologic cross section.

The project area is characterized by gently dipping sedimentary strata that are cut by a series of canyons containing ephemeral streams. Starting at the topographically highest surface point within the project area, these formations include the Dakota Sandstone, Brushy Basin and Salt Wash Members of the Morrison Formation, Summerville Formation, Entrada Sandstone, and the Page and Navajo Sandstones. Of these formations, only the Entrada and Navajo Sandstones yield groundwater to wells and springs in sufficient quantity and quality to be useful. Groundwater present in other units including the Morrison Formation is generally of limited quantity and/or poor quality. Attachment D provides additional information on geology and hydrogeology for both the region and project area.

~~DUSA submitted a request on September 6, 2006, to t~~The Utah Department of Environmental Quality (UDEQ) **granted DUSA** ~~for~~ a groundwater discharge permit by rule for the evaporation pond **on March 22, 2007**. ~~This request is based on the Administrative Rules for Ground Water Quality Protection R317-6, Utah Administrative Code Section R317-6-6.2(A)6 dated August 20, 2004. This permit-by-rule section of the regulation states that natural ground water seeping or flowing into conventional mine workings which re-enters the ground by natural gravity flow prior to pumping or transporting out of the mine without being used in any mining or metallurgical process is considered to be permitted by rule, and is not required to obtain a discharge permit under R317-6-6.1. A response was received from UDEQ on September 28, 2006 with a request for additional geologic and hydrogeologic information. DUSA provided this additional information to UDEQ on November 17, 2006 and all correspondence has been included in Attachment F. UDEQ provided a second response on December 21, 2006, again requesting additional information and justification for the permit-by-rule request. A response to this second request included modeling performance of the pond liner and providing additional justification that pond contents will not affect underlying water bearing units.~~ This **letter** ~~response~~ has been included for addition to Attachment F.

106.9 - Location and size of ore and waste stockpiles, tailings and treatment ponds, and discharges

Describe the location and size of any proposed waste/overburden dumps, stockpiles, tailings facilities and water storage or treatment ponds.

a) Waste rock from underground development will be placed in the waste rock area (WRA) located southwest of the portals (see Figure 5) using end-dumping and top-dumping methods. The WRA will be located on top of the previously reclaimed WRA and will encompass approximately 7.6 acres. (Note: If the portal area, access road, permanent diversion channel, and the ore chute area are included, the area covered by mine waste rock is approximately 11 acres). The WRA will have two 35-foot high benches and angle of repose slopes (1.5H:1V). Once the mine enters the production stage, waste rock will be disposed of in mined-out areas of the underground workings.

b) The ore stockpile area will be located immediately southeast of the mine portals as shown on Figure 5. This ore stockpile area encompasses approximately 1.2~~4~~ acres, and can accommodate up to 30,000 tons of stockpiled ore assuming an average stockpile height of 15 feet, a stockpile density of 90 lbs/ft^3, and three to four separate stockpiles.

c) The existing ore stockpiles are located northeast of the mine portals as shown on Figure 4A. The northern and southern stockpiles encompass 1.7~~64~~ and 2.8~~99~~ acres, respectively, and contain approximately 6,400 and 52,100 bcy of material respectively.

d) An 18-acre evaporation pond will be constructed on top of the mesa within the footprint of the previous evaporation pond (see Figure 6). The earthen dam, which has been breeched, will be repaired by placing the previously removed clay material back into the breach in a series of compacted lifts. Geotechnical tests indicate that the clay soils that comprise the ground surface of the pond are suitable for reconstructing the clay liner. After removing vegetation and roots, the top 12-inches of these soils will be ripped, scarified, moisture conditioned, and compacted, as described in Attachment F, to achieve a clay liner with a low coefficient of permeability. An emergency overflow will be constructed in the southwest corner of the pond; however, the pond has been designed as a zero-discharge facility and no discharge is anticipated at this time.

e) No on-site processing or tailings areas are proposed.

Describe how overburden material will be removed and stockpiled.

The underground mine will be accessed through existing portals and adits; therefore, no removal of overburden will be required. The two proposed new vent holes will be drilled through the overburden by first drilling a small pilot hole from the surface. A larger diameter head will then be attached at the bottom of the drill string within the mine workings and the vent hole will be reamed from the bottom up with the cuttings falling into the mine. This waste material will be hauled to the WRA or disposed of underground in mined out areas.

Describe how tailings, waste rock, rejected materials, etc. will be disposed of.

There will be no on-site processing (physical or chemical) of ore; accordingly, there will be no tailings or reject materials (e.g., crusher fines). Waste rock will be disposed of in the WRA and in mined-out areas of the underground workings as described above. Rock that is not removed from the existing ore stockpiles will be left in place and reclaimed.

Describe the acreage and capacity of waste dumps, tailings ponds and water storage ponds to be constructed. All impoundments must include the necessary hydrologic calculations to determine if they are adequately sized to handle storm events.

Figures 5 and 8 show the location and configuration of the proposed WRA. The WRA has a maximum projected disturbance area of 7.6 acres and a maximum capacity of 206,600 cubic yards or about 280,000 tons, assuming an in-place WRA density of about 100 lbs/ft^3. Assuming that the declines and laterals measure 8-feet by 12-feet, an ore to waste ratio of 1:1, and an in-place density of 160 lbs/ft^3 for the sandstone ore body, approximately 7.68 tons of waste will be generated per foot of two-entry development. The 280,000 tons of WRA capacity can accommodate the waste generated from approximately 36,000 feet or seven miles of two-entry decline and lateral development.

The WRA has been designed for the maximum volume of waste that may be generated during Phase 1. It assumes that mining activities will be confined to decline and lateral development, which have a relatively high waste to ore ratio, and that all of the waste generated will be disposed of in the WRA. The actual amount of waste disposed of in the WRA will depend on the ratio of decline and lateral development to production mining and this ratio could vary considerably on an annual basis depending on market conditions. For example, if production mining is limited during Phase 1, most of the waste material mined would have to be hauled to the WRA. Conversely, if production mining is initiated early in Phase 1, underground areas will be mined out relatively quickly allowing for their use in waste rock disposal.

Figures 6 and 9 show the location and configuration of the proposed evaporation pond. The evaporation pond has a maximum surface area of 18.2 acres and a maximum capacity of approximately 300 acre-feet of water. A stage curve showing the pond elevation versus storage capacity is presented in Attachment G. This curve was developed by planimetering the surface area at each elevation and then multiplying the average surface area for each one-foot increment by one foot and adding the calculated volume to the cumulative storage volume. A minimum of five feet of freeboard will be maintained at all times at the dam. As described in Attachment G, this freeboard is adequate to contain the precipitation from a 100-year storm event without discharge. A water balance was also developed for the evaporation pond using average net evaporation rates for the region and an estimated steady-state pumping rate of 100 gallons per minute (gpm). The water balance indicates that the pond will have adequate storage capacity for two years and seven months. Future Phase 2 and 3 mine development may require that the pond be expanded in size and capacity to contain the additional water generated from expanded and deeper mining operations.

Describe any proposed effluent discharge points (UPDES) and show their location on the surface facilities map. Give the proposed discharge rate and expected water quality. Attach chemical analyses of such discharge if available.

The discharge point from the waterline to the pond is shown on Figures 4B and 6. The evaporation pond's emergency overflow is located in the southwest corner of the pond as shown on Figure 6. No discharge from the pond is anticipated at this time. Additional information regarding the pond and proposed dewatering operations, including water quality analyses, is provided in Attachment F.

IV. Rule R647-4-107 - Operation Practices

During operations, the Permittee / Operator shall conform to the practices listed under this section of the Minerals Rules unless the Division grants a variance in writing.

Describe measures taken to minimize hazards to public safety during mining operations regarding:

the closing or guarding of shafts and tunnels to prevent unauthorized or accidental entry in accordance with MSHA regulations;

the disposal of trash, scrap metal, wood and extraneous debris;

the plugging or capping of drill, core or other exploratory holes;

the posting of appropriate warning signs in locations of public access to operations;

the construction of berms, fences or barriers above highwalls or other excavations.

If any of these safety measures are unnecessary, please explain why.

a) Portals will be equipped with screened metal gates and double locks. Each vent hole will be covered with a metal diffuser head that extends about four feet above the ground surface. The opening on top will be covered with metal mesh to preclude access.

b) Solid waste including paper, cardboard, wooden pallets, office and lunch room wastes, tires, broken pipe, scrap metal, and other materials will be collected in suitable containers and hauled offsite for recycling and/or disposal in an appropriate landfill. Old batteries will be stored on a wooden pallet until they can be picked up for recycling.

Demolition debris from the former mine operation could be encountered during construction activities. Inorganic debris such as concrete, bricks, and tile would be reburied in a nearby area. Any organic debris encountered would be hauled to an off-site landfill.

c) Surface exploration drilling within the claim block will be conducted under separately approved exploration notices. Drill holes will be abandoned in accordance with Rule 647-4-108 of the Utah Administrative Code as discussed below. Underground exploratory holes, driven laterally over a short distance, will not require plugging.

d) Signs will be posted along the county road on both sides of the main surface facilities. The signs will list the mine name and safety information. Employees and visitors will be required to park in a designated parking area near the mine office. A lockable metal gate will be located near the portal area as shown on Figure 5.

e) No highwalls or other excavations are planned. A barbed-wire fence will be constructed around the evaporation pond to exclude livestock.

Describe measures taken to avoid or minimize environmental damages to natural drainage channels which will be affected by this mining operation.

The natural drainages that are located within or adjacent to the project area are all ephemeral drainages. The primary surface drainage, which is a north-south drainage located along the east side of the main surface facilities area (see Figure 5), and the majority of its tributaries will not be directly impacted by mining operations. Work within these drainage areas will be limited to maintenance of the existing culverts that cross under the county and secondary roads. A small drainage tributary that flows through the proposed WRA will be diverted into a new, permanent channel to be constructed along the west perimeter of the WRA. This new channel will discharge into an existing drainage located further to the south. Earthen berms and diversion channels will be used to route any water flowing from the surface mine facilities into **the** temporary sedimentation basins. No water from the mine surface facilities area will flow directly into an existing drainage way without first being routed through **the** ~~a~~ sedimentation basin. These measures are discussed and illustrated in Attachment G.

Reconstruction of the evaporation pond will block the drainage through the dam area. Surface runoff into the evaporation pond is limited to approximately 20 acres consisting of the pond area and the surrounding hillsides. A low ridge separates the pond from the ephemeral drainage located west of the pond (see Figure 6). An emergency overflow will be installed in the existing southwest dike that connects the west ridgeline with the hillside southeast of the pond. In the event of an emergency, water would be discharged from the overflow into the natural drainage west of the pond. Upon completion of mining, the evaporation pond and the southwest dike will be breached and the natural drainage system will be restored. No soil stockpiles will be stored within the drainage basin of the pond.

Additional details regarding the drainage plan, both during mining operations and post-reclamation, are presented in Attachment G.

Describe measures taken to control and minimize sediment and erosion on areas affected by this mining operation. Describe measures being taken to prevent sediment from leaving the disturbed area.

During the initial stage of mine operations, the crews will be relatively small and surface impacts will also be correspondingly small. To reduce erosion, the WRA and building areas will be expanded in an incremental manner. Topsoil and vegetation will be removed only from those areas needed to support the mine's immediate needs. The topsoil piles created during clearing operations will be seeded, and if erosion is excessive, earthen berms will be constructed below the piles.

The portal area, waste rock area, ore stockpile area, existing ore stockpiles, and associated topsoil stockpiles represent the greatest area of surface disturbance (and the greatest potential for erosion) within the main surface facilities area. Sediment will be controlled by constructing a temporary ditch along the west side of the county road from the portal access road to the south end of the topsoil stockpiles. The runoff collected in this ditch will ~~feed into a~~ **flow into a culvert that crosses the county road and into the temporary** sediment basin before overflowing into ~~a culvert that crosses under the county road into~~ the primary drainage (see Figure 5).

Earthen berms, straw-bale barriers, and vegetation buffers will be used to control sediment in other areas of potential impact within the main surface facilities area and the existing ore stockpile areas. The existing drainage controls for the road system (culverts, waterbars, and ditches) will be maintained as needed. A temporary sediment basin will be used to capture water from the surface facilities area. The downstream slope of the evaporation pond will also be seeded after

reconstruction to minimize surface erosion. Additional details regarding erosion and sediment control are provided in Attachments G and H.

Identify any potentially deleterious materials that may be stored on site (including fuel, oil, processing chemicals, etc.) and describe how they will be handled and stored.

Diesel fuel, gasoline, oil products (i.e., motor oil, hydraulic oil, gear oil, and used oil), starting fluid, and antifreeze will be stored and used on site in accordance with the provisions of the SPCC Plan (see Attachment I).

Small volumes of solvents used to degrease and clean parts will be used in the maintenance shop. These chemicals will be stored and used at a solvent wash basin. The waste solvent will be collected in a small drum, which will be picked up on a periodic basis by the vendor and recycled/disposed of in accordance with Resource Conservation and Recovery Act (RCRA) regulations.

Magnesium chloride and/or calcium chloride will be sprayed on the haul roads within the mine workings, waste rock area, and portal area to reduce fugitive dust. These chemicals will be stored in liquid form in tanks located near the portals (see Figure 5). Soil berms constructed around the tank area will provide secondary containment in the event of a spill or leak.

The ore will be hauled to an off-site mill in covered trucks for processing; accordingly, no processing chemicals will be stored or used on site.

Describe the measures taken to salvage and store soils to be used in reclamation.

Prior to disturbing an area, the existing topsoil and any subsoils determined to be suitable as growth media will be stripped using a small dozer and/or front-end loader in accordance with the provisions outlined in Section 106.6. The salvaged soil will be placed in **the** ~~designated~~ topsoil stockpile~~s~~ that **is** ~~are~~ outside of the drainage and road systems (see Figures 5 and 6).

Describe how stockpiled topsoil will be protected from erosion and further impact.

The stockpile~~s~~ will be seeded in the fall to stabilize the soil using the appropriate seed mix from Table 5. Earthen berms will be installed downslope of the stockpile~~s~~ if the pile~~s~~ **is** ~~are~~ prone to erosion.

Please describe any reclamation to be done during active mining operations prior to final closure. Reference these areas on a map.

The Tony M Mine is an underground operation with relatively limited surface disturbance. All surface facilities will be needed throughout the life of the mine.

V. Rule R647-4-108 - Hole Plugging Requirements

All drill holes that will not eventually be consumed by mining must be plugged according to the methods listed in this section. Describe the location of any aquifers encountered by drilling and the method to be used to plug such water containing holes. Describe the method to be used for plugging holes not containing water.

~~Vent holes will be plugged using methods similar to those previously used for site closure and reclamation. A steel plate will be welded over the vent hole casing and then a collar, consisting of a minimum of 6 inches of reinforced concrete, will be constructed around the top of the hole. Concrete reinforcement will consist of small I beams and rebar. Three to four feet of backfill will be placed over the concrete collar.~~

Vent holes will be reclaimed by backfilling with loose fill material obtained from the existing mine dump. The backfill material will be covered by 3 to 4 feet of the soil stockpiled during construction of the vent hole. Stockpiled top soil will be placed over the backfilled material. All disturbed areas will be ripped and seeded in the late fall. Reclamation will occur concurrently following disturbance whenever possible.

Exploration drilling will be conducted under separately approved NOI/POs. Drill hole abandonment will include setting a nonmetallic permaplug at a minimum of five feet below the surface and filling the hole above with concrete. Holes that encounter non-artesian water will be plugged by placing a 50-foot cement plug immediately above and below the aquifer(s) or filling the hole from the bottom up with a high-grade bentonite/slurry mixture. No artesian water sources have been identified within the project area.

VI. Rule R647-4-109 - Impact Statement

109.1 - Surface and groundwater systems

Describe impacts to surface or groundwater that could be caused by this mining operation. Describe how these impacts will be monitored and mitigated. The appropriate groundwater and stormwater control permits need to be obtained from the Division of Water Quality. Please reference any such permits.

Groundwater will be pumped from the underground workings to an 18-acre evaporation pond located on top of the mesa. The groundwater is of poor quality with elevated concentrations of dissolved solids and sulfate and elevated radionuclide activity levels. Dewatering operations will cause a temporary cone of depression to form in the mine area. The aquifer is not used as a water source; therefore, there will be no impact on water well users. Groundwater levels are expected to return to their premining levels after dewatering operations are discontinued.

The evaporation pond has been designed as a zero-discharge facility. The pond, which will have a clay liner of low hydraulic conductivity (1×10^{-8} cm/s), will be situated on top of alternating layers of shale/claystone and sandstone. Seepage is expected to be minimal and no impacts to groundwater are projected. The formation being dewatered is approximately 400 feet below the pond and is the closest aquifer to the pond. The Request for Ground Water Discharge Permit by Rule is provided in Attachment F. This request also includes groundwater quality data, geotechnical analysis, and a review of the local geology and groundwater.

Surface water within the project area is limited to ephemeral drainages. These drainages will be protected as described in Section IV and in Attachments G (Surface Drainage Plan) and H (Stormwater Pollution Prevention Plan).

109.2 - Wildlife habitat and endangered species

Describe the impacts on wildlife habitat associated with this operation. Describe any impacts to big game species found in the area. Describe any impacts to riparian areas. Describe any impacts this operation will have on waterfowl (fly-over, temporary resident or permanent resident). List any threatened or endangered wildlife species found in the area. Describe impacts to threatened or endangered species and their habitats. Describe measures to be taken to minimize or mitigate any impacts to wildlife or endangered species.

The surface disturbance associated with the project combined with the noise, moving equipment, and the increased presence of humans is likely to result in the temporary displacement of some of the small mammals and birds that inhabit the area. No riparian areas and no threatened, endangered, or sensitive plant or wildlife species have been identified within or near the project area. Bats are prolific due to the large number of nesting sites available in the historic underground mine openings that are located throughout and adjacent to the project area. Individual bat species were not identified. The reconstruction of the evaporation pond would likely benefit the bat population, as the water would draw insects that the bats feed on. Big game species were not observed at the site; however mule deer and possibly elk may be present in low numbers and bison may use the area for winter grazing. Impacts to big game species are not anticipated because the site is relatively small compared to the available habitat for these species. Although raptors species were observed during field surveys in April and June 2006 **(raptors were not observed during surveys on June 13 and 14, 2007)** no raptor nesting activity was observed within 0.5 miles of any proposed mining or construction activity within

the project area. Raptor surveys were conducted by setting up monitoring sites along the roadway, approximately every three tenths of mile based upon terrain. Monitoring sites were chosen to allow thorough observation of all cliff faces (i.e., potentially suitable raptor nesting habitat) within the project site. At each observation point, the surrounding cliff faces were scanned for sign of roosting activity and raptor nests. Nests were confirmed using binoculars and/or spotting scope, and photographed with a digital camera. In addition to the canyon-bottom drive, the mesa top above the portals was walked, and surrounding cliff faces were scanned.

Historic and more recent water quality data for the mine water indicate that total dissolved solids (TDS) range from 1,820 to 5,810 milligrams per liter (mg/L) and gross alpha from 49.7 to 222 picoCuries per liter (ρCi/L), as compared to the Utah water quality standards for stock watering of 2,000 mg/L TDS and 15 ρCi/L gross alpha. The gross alpha levels also exceed the Utah aquatic wildlife standard of 15 ρCi/L. Other measured water quality parameters are generally within the regulatory standards for both livestock and wildlife. The elevated TDS concentrations and associated sulfate levels of 1,150 to 4,050 mg/L are lower than the levels observed in the Great Salt Lake, and the water can be consumed by livestock and wildlife on a limited basis without harm. However, the water may have an objectionable taste and consumption of the water may cause diarrhea, especially in younger animals. The elevated radioactivity levels could also result in chronic impacts to livestock or wildlife if consumed over a long time period.

Mitigation measures will consist of fencing the pond to preclude access by livestock. Waterfowl are expected to be limited to flyovers, as the site is located within 15 miles of Lake Powell, which provides many square miles of fresh-water habitat.

DUSA will place a small mesh around the bottom of a fence around the evaporation pond in an effort to eliminate potential wildlife intrusion. Due to the close proximity of the pond to Lake Powell, it is considered unlikely that wildlife will use the pond versus the lake. Similar techniques that have been used effectively to defer wildlife at DUSA's White Mesa Mill include the use of wildlife diversion ponds and propane cannon. An evaluation of the use of the pond by migratory birds will be completed and a propane cannon will be used, as necessary, to deter wildlife from using the pond.

An analysis of the 100 year rainfall event was conducted for the evaporation pond drainage basin. It was determined that a 100 year event would increase the water level in the pond by 0.1 inches with a conservative runoff coefficient of 1.0. A 5-foot freeboard is provided at the dam for the evaporation pond. Based on this information, it is unlikely that even an extreme runoff event would overtop the pond and allow for surface water discharge of pond water or sediments. This analysis is included in Attachment G.

During mining activities, the water level in the pond is not expected to decrease; therefore, it is not likely that the pond sediments will be unsaturated during the mining activity, and they will not become airborne. DUSA recognized the potential for mine water to contaminate sediments in the pond and will sample pond sediments following mining activities. Based on the results of the pond sediment analysis following mining activities and their comparison to baseline conditions at the pond site, DUSA will remove contaminated sediments and place them into the underground mine workings. This commitment will minimize the opportunity for remaining contaminated sediments to impact wildlife or become airborne after the cessation of mine operations.

Wildlife resources within the project area have been described and summarized in more detail in the Wildlife Resources Baseline Technical Report, which is included as Attachment M. This report and scope of analysis were developed based upon coordination with DOGM personnel and the BLM Hanksville Field Station biological staff in the spring of 2006 **and spring of 2007**.

109.3 - Existing soil and plant resources

Describe impacts to the existing soil and plant resources in the area to be affected by mining operations. Describe impacts to riparian or wetland areas which will be affected by mining. Describe impacts to threatened or endangered plant species. Describe measures to be taken to minimize or mitigate any impacts to soil and plant resources.

Incremental impacts to soil and plant resources will be minimal, as 98.~~65~~ percent of the areas to be disturbed were disturbed by previous mining activity and have been reclaimed (see Table 1). DOGM still retains a revegetation bond for much of the reclaimed area. No wetlands or threatened, endangered, and sensitive plant species were identified as being within or adjacent to the project. Impacts to ephemeral drainages and associated riparian areas will be limited to permanently diverting the small drainage located just west of the main portals around the perimeter of the WRA, reconstructing the dam within the small drainage on top of the mesa, and maintaining the existing road culverts that are installed within drainages.

Soil and plant mitigation measures will include salvaging the available topsoil and any suitable subsoil material prior to disturbing an area. Erosion and sediment control measures will be implemented, as described in Attachment H, to minimize loss of soil resources. Vegetation resources will be mitigated by seeding topsoil stockpiles and any reclaimed areas during the fall planting season. Upon mine closure, the disturbed areas will be revegetated as described in Section VII below.

109.4 - Slope stability, erosion control, air quality, public health & safety

Describe the impacts this mining operation will have on slope stability, erosion, air quality, public health and safety. Include descriptions of highwall and slope configurations and their stability. Air quality permits from the Utah Division of Air Quality may be required for mining operations. Please reference any such permits. Describe measures to be taken to minimize or mitigate impacts to slope stability, erosion, air quality, or public health and safety.

Slope Stability: Surface excavations with attendant highwalls are not proposed, as all mining will be done using underground methods. Natural highwalls exist in the portal area. If areas of loose rock on the highwalls present a safety concern, the loose rock will be pried down or stabilized in place with rock bolts and metal mesh. Constructed slopes include the evaporation pond dam and the waste rock area (WRA). Calculated safety factors ranged from 1.3 for pseudo-static analysis of the downstream slope using a 0.2 seismic coefficient to 3.02 for static analysis of the steady-state, long term condition on the downstream slope. The calculated safety factor for a rapid drawdown condition on the upstream slope was 2.80. Details are provided in Appendix E. The WRA will have two benches and a maximum bench height of 35 feet, which is about the same height as the previous WRA that was constructed and reclaimed in the same location. Given the relatively small vertical height of the proposed benches and the apparent stability of the previous WRA, the WRA is expected to be stable during mine operations. During reclamation, the dam will be breached and left in a non-impounding condition with maximum slopes of 2.H:1V in the breach area and slope angles of 3.5H:1V and 4H:1V on the upstream and downstream slopes. The WRA will be regraded to achieve final slopes of 3H:1V or less steep. Rock left on site after removing the existing ore stockpiles will be regraded as necessary to achieve final slopes of 3H:1V or less steep.

Erosion: Areas of potential erosion include the downstream dam slope, the waterline corridor, topsoil stockpiles, the WRA slope and the ore stockpiles. The remaining areas are relatively flat with low potential for erosion. The dam embankment and the downslope portions of the waterline corridor will

be stabilized by broadcast seeding the disturbed areas after reconstruction is complete. Topsoil stockpiles will be seeded during the first fall planting season after the soil is stockpiled. Some erosion will occur on the WRA slopes and the sides of the ore stockpiles as they will be in a state of continual change and disturbance during operations.

The impact from erosion will be minimized by installing sediment control measures. Erosion from the WRA, ore stockpile area, **and topsoil stockpile** ~~TS-1, and TS-2~~ will be captured by a temporary drainage ditch located along the west side of the county road. This ditch will discharge into a **temporary** sedimentation basin~~, which in turn will overflow into the main drainage~~ on the east side of the county road. Undisturbed buffer zones of 20 feet will be left between the remaining areas of proposed disturbance (i.e., mine buildings, storage yards, and parking areas). Earthen berms and/or strawbale barriers may also be installed in areas prone to erosion.

Air Quality: Air quality will be protected in accordance with the provisions of the project's Air Quality Operating Permit. The Notice of Intent that was submitted to the Utah Division of Air Quality is provided as Attachment J. The site's two diesel generators are the principal source of project emissions. These generators will be equipped with engines and air filters that meet state emission standards. Fugitive dust on mine roads will be controlled through enforcement of speed limits and treatment of the roads with magnesium chloride or a similar compound. A water truck will also be used to spray the mine roads within the permit area, as needed.

Public Health and Safety: The mine, which is located in a remote area, experiences low levels of vehicle traffic from ranchers and all-terrain vehicles (ATVs). Warning and speed limit signs will be posted along the county road to control speeds and warn drivers of the proximity of mine equipment. When not in active use, portals, adits, buildings, and gates will be locked to preclude unauthorized access.

VII. Rule R647-4-110 – Reclamation Plan

110.1 - Current land use and postmining land use

Current or premining land use(s) [other than mining]: Livestock grazing, wildlife habitat, and recreation.

List future post-mine land-use(s) proposed: Livestock grazing, wildlife habitat, and recreation.

(Develop the reclamation plan to meet proposed post-mine land use.)

110.2 - Reclamation of roads, highwalls, slopes, leach pads, dumps, etc.

Describe how the following features will be reclaimed: roads, highwalls, slopes, impoundments, drainages and natural drainage patterns, pits, ponds, dumps, shafts, adits, drill holes and leach pads. Describe the configuration of these features after final reclamation. Describe the rinsing and neutralization of leach pads associated with final decommissioning.

Reclamation treatments are shown on Figures 10A, 10B and 10C, and described in more detail below.

Describe how roads will be reclaimed. Road reclamation may include: regrading cut and fill sections, ripping the road surface with a dozer, topsoil replacement, construction of water bars, construction of traffic control berms or ditches, and reseeding.

Roads to be reclaimed are identified on Figures 10A – 10C. These roads include roads previously reclaimed by the former mine operator that will be reopened by DUSA to gain access to adits, vent holes, and the evaporation pond area. They also include two new roads to proposed vent holes and ~~an~~ existing road**s** that provide**s** access to the south side of the evaporation pond **and VH- 9**. Most of these roads are on relatively flat areas that do not have significant cuts or fills. The roads will be reclaimed by:

1. Regrading any cuts and fills to reestablish the original ground contours and drainages.
2. Ripping the roads to a depth of 18 to 24 inches.
3. Placing six inches of loose topsoil in locations where topsoil was removed.
4. Seeding the soil with the approved reclamation seed mix.

Describe how highwalls will be reclaimed. Highwall reclamation may include: drilling and blasting, backfilling, regrading, topsoil replacement, and reseeding.

A minor amount of additional cliff face will be exposed during the reopening of the existing portals and adits. Reclamation will include pushing backfill material into each opening for a distance of approximately 30 feet and then pushing backfill over the top of the portal opening so as to create a natural appearing talus slope of approximately 2H:1V. Salvaged topsoil will be placed over the slope and the soil will be pocked using a backhoe or hydraulic excavator and seeded. Pocking is the term used for the creation of microbasins with the shovel of a backhoe or hydraulic excavator and is discussed in more detail in Section 110.5.

Describe how slopes will be reclaimed. Slope reclamation may include: regrading to a 3 horizontal: 1 vertical (3h:1v) configuration, topsoil replacement, contour ripping, pitting, and reseeding.

With three exceptions, all of the slopes created by mining activity will be regraded to achieve reclaimed slopes of 3H:1V or less steep. Topsoil will be placed over the regraded slopes to the depths specified on Figures 10A – 10C. The slopes will then be ripped on contour and seeded with the approved seed mix.

The three areas where final slopes will be steeper than 3H:1V are the waterline corridor, the breached portion of the dam, and the sealed portals. The corridor, which is a pre-existing cut on a steep natural hill that has an average slope of 2H:1V, averages about 20 feet in width. The cut will be filled in to the extent practicable, as described in Section VIII, and will then be broadcast seeded. The reconstructed dam will be breached in a similar manner to the current breach with average slopes of 2H:1V. The corners of the breached area will be more rounded than the current configuration to more closely approximate natural clay hillsides in the area. The upstream and downstream faces of the dam will have final slopes of 3.5H:1V and 4H:1V, respectively. The portals will be sealed by pushing waste rock or soil 30 feet into each opening and then backfilling additional material against the opening to create a 2H:1V slope. Native topsoil will be placed over the final slope and seeded so that the sloped area resembles naturally occurring talus slopes in the area.

Describe how impoundments, pits and ponds will be reclaimed. Include the final elevations and final disposition of the drainage in and around the impoundment. If the impoundment, pit, or pond is intended to be left as part of the post-mining land use, then an agreement with the land managing agency/owner is required. Structures to remain must be left in a stable condition.

Include the final size of the impoundment, pit, pond in acre-feet of storage and the capacity of the spillway to safely pass storm events.

Impoundments, pits, and ponds, which are not approved as part of the post mining land use shall be reclaimed, free draining, and the natural drainage patterns restored.

All impoundments and **the temporary** sediment basins will be reclaimed to be free draining and to reestablish the natural drainage pattern. The project does not include any open pits. The dam for the evaporation pond will be regraded as shown on Figure 9 to be free draining with breached slopes of 2.H:1V or less steep. The 2H:1V slopes will be pocked and broadcast seeded by hand. Large rock salvaged from the upstream dam face during breaching will be placed in the bottom of the breach in a similar manner to the current configuration for erosion control purposes. The dam currently impounds one to two feet of water on a seasonable basis. When the dam is breached again, the breach will be graded to achieve a one to two percent positive slope throughout so that water will not be impounded after reclamation is completed. With the exception of the breach area discussed above, all regraded slopes will be ripped/scarified on contour and seeded with the approved seed mix.

The sediment in the bottom of the pond will contain low levels of uranium, vanadium, and radionuclides similar to the levels observed in the reclaimed pond area. Analytical data for these sediments is presented in the first part of Attachment K. Samples of pond sediments will be collected and analyzed both prior to and following the cessation of mining activities for the analytes discussed in Section 106.6, above. Based on the results of the pond sediment analysis and a comparison to baseline conditions at the pond site, contaminated sediments will be removed and placed into the underground mine workings.

The temporary sediment basin in the surface facility area (see Figure 5) will be backfilled and graded to be free draining. Topsoil will then be placed over the top and the area will be scarified and seeded.

Describe how drainages will be reclaimed. Drainage reclamation would include: the reestablishment of a natural drainage pattern which fits in with the upstream and downstream cross-section of existing drainage in the vicinity of the disturbance; the reestablishment of a stable channel in the reclaimed reach of channel, using the necessary armoring to prevent excessive erosion and downstream sedimentation.

The temporary diversion channel located below the WRA and ore stockpile area along the west side of the county road will be backfilled to the approximate original contours with salvaged topsoil placed on top. The area will then be scarified and seeded with the approved seed mix. The permanent diversion channel around the west perimeter of the WRA will be left in place to minimize the amount of runoff flowing down the slopes of the reclaimed WRA.

Include cross-sections and profiles of reestablished channels to demonstrate compatibility with existing drainage characteristics.

The cross-sections, profiles, and design calculations for the permanent diversion channel around the west perimeter of the WRA are presented in Attachment G.

Describe how waste dumps will be reclaimed. Waste dump reclamation may include regrading to a 3h:1v configuration, topsoil replacement, mulch or biosolids applications, contour ripping or pitting, and reseeding. Characterization of the physical and chemical nature of the waste dump materials should be provided.

Figure 8 provides cross sections of the existing, proposed, and post-reclamation surface of the WRA. Reclamation of the new WRA, which is located on top of the previously reclaimed WRA, will include grading the top of the WRA back towards the natural highwall and the permanent diversion channel. Drainage swales will also be incorporated into the top of both the upper and lower benches of the southern end of the WRA so that precipitation from large storm events is directed into the ephemeral drainages to the south. The top of the dump will be recontoured to create a natural appearing, undulating surface that readily retains moisture from smaller storm events. The angle of repose slopes will be graded to achieve slopes of 3H:1V to 5H:1V with an average slope of approximately 4H:1V. Prior to topsoil placement, that waste rock area will be ripped and inoculated with mycorrhizal fungi (see Section 110.5 (f)). Topsoil **which was removed** from the WRA and stored in the Topsoil Stockpile~~s TS-2A and 2B~~ will then be placed loosely over the regraded surface and seeded with the Greasewood Reclamation Seed Mix (see Table 5).

Rock remaining after mining of the existing ore stockpiles will be regraded as necessary to achieve final slopes of 3H:1V or less steep, and to blend in with the surrounding terrain. The existing stockpiles will be ripped and inoculated with mycorrhizal fungi (see Section 110.5 (f)) and seeded with the Blackbrush Reclamation Seed Mix (see Table 5).

Describe how shafts and adits will be reclaimed. Reclamation of shafts may include: backfilling, installation of a metal grate, installation of a reinforced concrete cap, topsoil replacement and reseeding. Reclamation of adits may include: backfilling, installation of a block wall, installation of a metal grate, topsoil replacement and reseeding.

Vent holes will be reclaimed by backfilling with loose fill material obtained from the existing mine dump. The backfill material will be covered by 3 to 4 feet of the soil stockpiled during construction of the vent hole. Stockpiled topsoil will be placed over the backfilled material. All disturbed areas will be ripped and seeded in the late fall. Reclamation will occur concurrently following disturbance whenever possible. ~~Vent holes (Figures 10B and 10C) will be reclaimed by welding a steel plate over the vent hole casing and then constructing a reinforced concrete cap over the steel plate. The concrete cap will include small I beams, angle iron, and rebar for structural support and a minimum thickness of six inches of concrete. The concrete cap will be covered by three to four feet of soil collected from within the area of disturbance associated with the vent hole. No topsoil salvage or storage will be required at each vent hole. All disturbed areas will be ripped and seeded in the late fall.~~ Vent Holes 1, 3 and 4 will be seeded with the Blackbrush Reclamation Seed Mix and Vent Holes 5 – ~~8~~**9** will be seeded with the Salt Desert Shrub Seed Mix (see Table 5).

The portals of the declines and adits will be reclaimed by placing waste rock backfill from 30 feet inside each portal to the portal entrance. Backfilling will also occur around and against each backfilled opening to create a natural appearing talus slope of approximately 2H:1V. A minimum of six inches of native topsoil (i.e., Badland-Rock Outcrop Complex or Glenberg Family) will be placed over the backfilled surface, which will then be pocked with a backhoe or hydraulic excavator. The reclaimed "talus" slope will be broadcast seeded by hand with the Greasewood Reclamation Seed Mix (see Table 5) in late fall.

Describe how drill holes will be reclaimed. Drill hole reclamation must be consistent with the rules for plugging drill holes (R647-4-108). Reclamation of plugged drill holes may include topsoil replacement and reseeding.

Exploration and geotechnical drill holes are not included in this NOI/PO, but rather are addressed in separate, stand-alone exploration notices. Unless approved otherwise, drill holes will be abandoned in accordance with Utah Administrative Code (UAC) Rule R647-4-108 (See Section V). Pad areas will be reclaimed by replacing salvaged topsoil, regrading and ripping the disturbed area, and broadcast seeding with the approved seed mix.

The project's water well will be permanently abandoned by a licensed driller in accordance with UAC Rule R655-4-12. This rule states that "Any well that is to be permanently abandoned shall be completely filled in a manner to prevent vertical movement of water within the borehole as well as preventing the annular space surrounding the well casing from becoming a conduit for possible contamination of the groundwater supply." After grouting, the well will be capped with concrete to a minimum of five feet below the ground surface, the well house will be demolished and removed, and the surrounding area will be regraded, ripped, and seeded.

Describe how tailings areas will be reclaimed. Tailings reclamation may include: dewatering, neutralization, placement of cap materials, placement of subsoil materials, topsoil replacement and reseeding. Characterization of the physical and chemical makeup of the tailings material should be provided.

The project does not include a tailings facility.

Describe how leach pads will be reclaimed. Reclamation of leached materials may include: neutralization or leached materials, rinsing of leached materials, dewatering leached materials, regrading slopes of leached materials to 3h:1v, extending pad liners, placement of capping materials, placement of subsoil materials, mulch or biosolids application, topsoil replacement and reseeding. Characterization of the physical and chemical makeup of the leached materials should be provided. Post closure monitoring and collection of drain down fluids should also be addressed.

The project does not include leach pads.

NOTE: The Minerals Rules require overall highwall angles of no more than 45° at final reclamation unless a variance is granted. All dump or fill slopes should be left at an angle of 3h:1v or less. Any slopes steeper than 3h:1v must be reclaimed using state-of-the-art surface stabilization technology. Pit benches exceeding 35 feet in width should be topsoiled, or covered with fines, and revegetated.

Describe the final disposition of any stockpiled materials on site at the time of final reclamation.

Stockpiled topsoil will be placed loosely over the top of regraded areas. Any remaining ore stockpiles will be shipped to the mill for processing if market conditions are favorable. If the ore stockpiles cannot be shipped to the mill, they will be regraded to achieve maximum slopes of 3H:1V or less steep and to blend in with the surrounding terrain. The ore stockpiles will contain low levels of uranium, vanadium, and radionuclides similar to the existing reclaimed ore stockpiles that are located in the vicinity of the Tony M Mine. Analytical data for samples collected from these stockpiles is presented in the latter portion of Attachment K. After regrading and redistribution of salvaged topsoils, the stockpile areas will be ripped and seeded in conformance with the specifications of the Reclamation Treatment Maps (Figures 10A, 10B, and 10C).

110.3 - Surface facilities to be left

Describe any surface facilities which are proposed to remain on-site after reclamation (buildings, utilities, roads, drainage structures, impoundments, etc.). Describe their post-mine application. Justification for not reclaiming these facilities must be included in the variance request section.

The existing county road that extends from south to north through the main facilities area and the State/BLM road that provides access to the top of the mesa will not be reclaimed. These roads, which are identified on Figures 10A-C, will continue to provide access to the area for livestock grazing and recreation. The existing secondary road that provides access to the area south of Storage Yard 2 will not be reclaimed. This road provides access to a reclaimed ore stockpile and unpatented claims held by other entities.

The permanent catch basin and the diversion channel that will be constructed around the west side of the WRA (see Figure 5) are designed to accommodate the 100-year storm event and will be left in place to facilitate post-reclamation surface drainage.

The water well, which is located on State of Utah land in Section 16, may be transferred to the School Institutional Trust Lands Administration if the agency desires to keep the well for grazing or other uses. The decision whether to maintain or abandon the well will be made prior to mine closure and

reclamation. If the well is not transferred, it will be abandoned properly in accordance with state regulations. The cost to abandon the well is included in the reclamation cost estimate.

110.4 - Treatment, location and disposition of deleterious materials

Describe the nature and extent of any deleterious or acid forming materials located on-site. Describe how these materials will be neutralized, removed, or disposed of on site. Describe how buildings, foundations, trash and other waste materials will be disposed of.

There are no known acid-generating materials at this site and there will be no storage or use of process chemicals. Potentially deleterious materials on-site were previously identified in Section IV and include petroleum products, solvents, and road stabilizing chemicals. At the time of mine closure, the remaining petroleum products on site will be used for their intended purpose, transported to another facility, or returned to the vendor. The used oil will be removed and transported to a recycling facility by the vendor. After removal of their contents, the tanks will be shipped to another facility, sold, or properly decommissioned and sold as scrap. The liner underneath the fuel station will be exposed, cut into sections, and hauled to an off-site landfill for disposal. Any soil found to have petroleum/oil contamination would be characterized and remediated by ripping the soil to allow volatilization of the petroleum/oil. The solvent station and any remaining solvent would be returned to the vendor. The road stabilizing products would be used to control dust during reclamation and the tanks would then be removed and shipped off site.

Trailers will be hauled to another facility, sold, or **broken down and disposed of within the mine** ~~hauled to a landfill for disposal~~. Prefabricated buildings will be disassembled and reassembled at another facility, sold, or **broken down and** disposed of **within the mine** ~~at an off-site landfill~~. The metal portions of the ore chutes will be cut into pieces using a torch and ~~either~~ hauled off-site for recycling ~~or used to seal the vent holes~~. Solid waste meeting the definition of "inert waste" under UAC Rule R315-301-2 (e.g., concrete, blocks, brick, incidental rebar, and glass) will be broken up and buried on site. These materials will not be buried within the Shootaring Canyon flood plain. All concrete foundations and pads will be broken, using a hydraulic excavator with a concrete breaker (or equivalent) to dimensions of five feet or less. The broken concrete will be buried/covered with a minimum of three feet of soil, or alternately, it may be hauled into and disposed of within the mine prior to closing the portals.

Pond sediments at the end of mining operations will be managed as described in the following discussion. **DUSA** ~~Denison~~'s commitment to cleanup evaporation pond sediments to baseline conditions is predicated on the construct that the existing pond sediments constitute the baseline condition for the pond. In this regard, radiological baseline data have been obtained and compiled for natural uranium, thorium-230, radium-226, polonium-210 and lead-210 measured in the existing evaporation pond sediments. The results of these analyses (See Table 6) indicate that radiological parameters are generally near background concentrations and less than groundwater protective cleanup standards applied by UDEQ for a tailings cell cleanup at the White Mesa Uranium Mill (the Mill) in Blanding, Utah. Absent direct radiological soil concentration standards for mine sites, Denison proposes that the Mill's cleanup objectives should be applied at the Tony M mine relative to the evaporation pond sediments.

More specifically, the Mill cleanup objective is premised on a groundwater protection objective for uranium-natural in soil of 30 parts per million (above background) and the Nuclear Regulatory Commission's (NRC) standard for radium-226 and its progeny, 5 pCi/g above background. Because the sediment material received by the ponds has not been subjected to chemical processing, the decay chain progeny of Ra-226 are assumed in equilibrium with parent Ra-226. As such, measurement of

Ra-226 content acts as a surrogate for the progeny nuclides, alleviating the need to analyze other decay chain members (i.e. if Ra-226 content is measured at less than 5 pCi/g above background the remaining Ra-226 decay chain progeny can be considered to be acceptably beneath this concentration, absent actual laboratory measurement, the current data base supports this supposition).

With respect to final site cleanup locations, cleanup of sediments can be limited to the evaporation pond. The mine site will be provided with a catchment basins (temporary sedimentation basins) for stormwater control, however, it is anticipated that these facilities will not be receiving appreciable sediment from either the waste rock or the ore stockpiles due to physical conditions and controls at those locations. Accordingly, it is most likely that cleanup will not be necessary at these locations. However, any sediment contained within the temporary sedimentation basins will be identified by gamma survey following mining activities. If the sediments are found to be contaminated, they will be removed and placed within the mine workings. In addition, during mine operations the temporary sedimentation basins will inspected periodically for sediment buildup and, as necessary, sediment removal and in-mine disposal would be completed to maintain the integrity and size of the basins. Waste rock piles (and underlying soils) will not require removal or cleanup at mine closure because the planned reclamation of the waste rock piles includes soil cover and other erosion protection features. Accordingly, the waste rock will be protected from contact with rain water, eliminating the potential for both surface and groundwater impact subsequent to mine closure. In addition to serving as a protection for sediment transport, the reclamation soil cover for the mine's waste rock piles also serves to reduce the potential for emanation of radon and gamma radiation from the waste rock. Surface water quality would not be adversely impacted by the proposed action with respect to waste and ore stockpiles or temporary sedimentation basins.

Regarding the depth of excavation during cleanup (and the overall logistics of the cleanup effort) the following general protocol is anticipated. As an element of mine closure, gamma measurements and soil samples will be collected at unaffected background locations near the mine and at several locations in the evaporation pond. The results of the gamma measurements and laboratory analyses will then be used to develop an above-background gamma cleanup goal consistent with the proposed concentration limits. Once determined, the gamma goal can then be used to direct and verify final cleanup efforts. Because the sediment has not yet been generated, the depth of excavation can not be predicted at this time. Depending on local background, the soil concentrations proposed by Denison for the evaporation pond will most likely result in a gamma radiation cleanup goal within a 25-40 uR/hr range.

Finally, with regard to evaporation pond sediment storage, its potential for impact to groundwater and the solubility of the radionuclides in the sediments, the following information is provided. During operations groundwater protection at the evaporation pond is provided by the clay base upon which the evaporation pond is located, thus precluding transport from the pond location. At mine closure, the uranium standard proposed here, and previously accepted by UDEQ at the Mill, is derived as a groundwater protection standard considering the solubility of uranium. Similarly, the Radium-226 standard proposed here has been incorporated into regulation by the NRC and has been determined by NRC to be acceptable for the unrestricted release of impacted soil, including any consideration of groundwater impact and radiological exposure. Accordingly, a detailed discussion of solubility is somewhat moot given that the standards proposed by Denison are protective of groundwater and have already been accepted by other agencies.

110.5 - Revegetation planting program and topsoil redistribution

Describe the revegetation tasks to be performed in detail. For example, will ripping, mulching, fertilizing, seeding and scarifying of these areas be performed and if so, how will this be accomplished? Correlate this information with the Reclamation Treatments Map.

a) *Soil Material Replacement*

In order to reestablish the required ground cover, one to two feet (depending on underlying material) of suitable soil material usually has to be redistributed on the areas to be reseeded. If the stockpiled soil isn't sufficient for this, soil borrow areas will need to be located.

Describe the volume of soils and approximate depth of soil cover to be used in reclamation. Describe the source of these soils and provide an agronomic analysis of the soils. If soils will not be used describe the alternative material or amendments to be applied in lieu of soils. Describe the methods used to transport and place soils.

The topsoil stored in **the southwest portion of the** Topsoil Stockpile~~s TS-2A and TS-2B~~ will be placed loosely over the regraded waste rock area to an average depth of six inches or more. This will be accomplished using a dozer, front-end loader, and either scrapers or trucks. As discussed in Part F of this section, the waste rock surface will be ripped and inoculated with mycorrhizal fungi prior to topsoil placement. Mycorrhizal fungi do not need to be adapted to the area and it is assumed that mycorrhizal inoculum is available and viable. ~~The regraded waste rock area will encroach upon the footprint of the southern end of Topsoil Stockpile TS-2B; accordingly, the regrading and topsoil placement activities in this area will be conducted concurrently in a staged manner to avoid double handling or covering of the soil.~~

The topsoil ~~stored in Topsoil Stockpiles TS-1, TS-3, TS-4, and TS-5~~ will **also** be redistributed over the remaining disturbed areas in the portal area including the sealed portals. Based on projected topsoil salvage volumes, the entire disturbed area will receive an average of six inches or more of loose soil. The majority of the soil will be distributed using a dozer and/or front-end loader. Native soils will be placed on the 2H:1V reclaimed surface of the sealed portals (main portals, secondary portal, and the North and South Adits) because they are of higher quality than the waste rock soil and their brown to red color will blend in better with the surrounding cliffs.

The access roads to the North and South Adits and the vent hole pads and access roads will not receive topsoil. These areas are lightly used and the native topsoil remains on the road and pad surface. After regrading to the approximate original contour, these areas will be ripped and seeded as specified in the Reclamation Treatment Maps (Figures 10A, B and C). Prior to disturbance, available soil will be stockpiled from the access roads, adits, and pads for the new vent holes as far as possible given the limited soil availability at the site. Windrows to the sides of the adits, pads, and roads will be provided as available given the soil conditions at the site. The waterline corridor is situated in a cut on a steep, clayey hillside. Based on previous experience, soil material will slough into the cut over time. During reclamation, a hydraulic excavator will be used to push additional soil material from the immediate vicinity into the cut and scarify the surface. The existing clay soils that form the dam and pond surface will be ripped and seeded with the exception of the 2H:1V slopes within the breach area, which will be pocked and seeded as specified in Figure 10B.

b) Seed Bed Preparation

Describe how the seedbed will be prepared and equipment to be used. The Division recommends ripping or discing to a minimum of 12 inches and leaving the seed bed surface in as roughened condition as possible to enhance water harvesting, erosion control and revegetation success. Compacted surfaces such as roads and pads should be deep ripped a minimum of 18 inches.

Following replacement of soil, the surface of the soil will be roughened by either "ripping" the soil and/or "pocking" the soil. A roughened soil surface exhibits lower soil loss potential, increased moisture retention, cooler surface soil temperatures, and greater seed germination.

Slopes of 3H:1V or less steep will be ripped on the contour of the reestablished post-mine topography to a depth of 18 to 24 inches using a tracked dozer. All low-grade and flat terrain will be ripped to aid in water infiltration and retention of natural precipitation (rain and snow accumulation), and to deter soil loss due to wind erosion. The regraded waste rock area, with the exception of the portal face, will be ripped, as will the recontoured and graded surface facilities, yards, parking areas, and roads (Figure 10A). All vent hole pads and access roads (Vent Holes-1 and 3 – ~~8~~9) will be ripped (Figures 10B and 10C). The recontoured south and east access roads to the evaporation pond, the evaporation pond surface, and the dam (with the exception of the breach area) will be ripped as well (Figure 10B).

On slopes greater than 3H:1V, pocking of soil will be implemented prior to seeding across the entire slope. Pocking is the creation of microbasins with the shovel of a backhoe, hydraulic excavator, or equally able equipment. Basins should exhibit a minimum depth of 18 inches and the width of the shovel (two to four feet). The most common method for implementation is to dig a bucket load of soil at an 18 inch depth, and deposit the soil two to three feet above the newly created basin. The process is repeated in a random and overlapping pattern ensuring no downhill conduit for water flow. Areas that will be pocked include the backfilled grade along the cliff face associated with the sealed portals, the North and South Adits (Figure 10A), the waterline corridor, and the regraded evaporation pond breach (Figure 10B).

c) Seed Mixture - List the species to be seeded:

Provide a seed mix listing adaptable plant species and the rate of seeding that will be used at the site for reclamation. More than one seed mix may be needed, depending upon the areas to be reclaimed. Keep the proposed post-mining land use in mind when developing seed mixes.

Example

Species Name	*Common Name*	*Seeding Rate (lbs Pure Live Seed/Acre)*

Total lbs/acre _____

(The Division recommends seeding 12-15 lbs./acre of native and introduced adaptable species of grass, forb, and browse seed for drill seeding and 15-20 lbs./acre for broadcast or hydro seeding. The Division can provide assistance in developing reclamation seed mixes if requested).

The post-mining land use will be returned to a grazing and wildlife land use on a natural landscape. Therefore, the seeding mix has been designed to reflect the species composition observed within the project area and surrounding landscape, as well as those not observed, but typically associated with the

landscape, soil type, elevation, and precipitation of the project area. Four seeding prescriptions have been developed for revegetation of the project area. These prescriptions are specific to existing vegetative communities identified in the vegetation baseline report: greasewood, blackbrush, evaporation pond and salt desert shrub, included as Attachment C.

Seeding prescriptions were developed in accordance with the *Federal Native Plant Conservation Memorandum of Understanding* (www.nps.gov/plants). The project area landscape naturally exhibits a high degree of bare ground cover (58.7-78.4 percent) and the use of non-native species for the purpose of establishing vegetative cover is not necessary. Furthermore, the risk of establishment, proliferation, and displacement of native species by non-native species is not justified. The native species utilized in the seeding mixes below are generally available from commercial suppliers, although it may be necessary to substitute for specific species if they are not available at the time of reclamation.

The greasewood community is associated with the deep alluvial drainages associated with intermittent stream systems. Based upon site assessments associated with vegetation surveys and evaluation of past history at the former mine facility area, it is assumed that a greasewood community was dominant within the lower canyon area including the waste rock and proposed surface facilities areas prior to previous mining and reclamation activities. A greasewood seed mix (see Table 5) will be broadcast seeded at a rate of 15 pounds of pure live seed (PLS) per acre, upon surface treatment (predominantly ripping, with pocking on slopes greater than 3H:1V) of the reclaimed portal area (see Figure 10A). Approximately 20.5 acres will be reseeded with the greasewood seed mix.

The blackbrush community is the predominant vegetation community within the mine project area and is associated with the shallow soils across the top of mesas and benches, as well as some of the deeper soils in the upper portions of the canyons. The blackbrush seed mix developed for this vegetation community (see Table 5) will be broadcast seeded at a rate of 15 pounds of PLS per acre, upon surface treatment, of the North and South Adits and associated access roads (Figure 10A), pads and access roads for Vent Holes 1, 3 and 4, and the south access road to the evaporation pond (see Figure 10B). Approximately 6.3 acres will be reseeded with the blackbrush seed mix.

The evaporation pond area consists of a clay soil liner and currently collects one to two feet of water on a seasonal basis below the elevation of its outlet. The evaporation seed mix developed for this previously disturbed area consists of species observed within and adjacent to the area. This mix will be broadcast seeded at 15 pounds of PLS per acre, upon pocking of the breach slopes and ripping of the dam, pond area and east access road (see Figure 10B). Approximately 22.5 acres will be reseeded with the proposed evaporation pond seed mix. In addition, salt grass plugs will be planted on a limited basis in the area of the evaporation pond. If the salt grass plugs are effective, they will be planted throughout the evaporation pond area.

The salt desert shrub community present within the northern portion of the permit area is associated with the deep alluvial drainages and intermittent stream systems. A salt desert shrub seed mix developed for this vegetation community will be broadcast seeded at a rate of 15 pounds of pure live seed (PLS) per acre, upon surface treatment (ripping) of the pads and access roads at Vent Holes-5, 6, 7, **8,** and ~~8~~**9** (Figure 10C). Approximately one acre will be reseeded with the salt desert shrub seed mix.

No reseeding of the waterline corridor is proposed due to heavy natural clay soil and extreme soil chemistry in these native soils. After regrading, the waterline corridor will be scarified or pocked with sediment controls (e.g., berms or waterbars) installed in high runoff areas to minimize the potential for rills and gullies to form along the corridor.

d) Seeding Method

Describe method of planting the seed. The Division recommends planting the seed with a rangeland or farm drill. If broadcast seeding, harrow or rake the seed 1/4 to 2 inch into the soil. Fall is the preferred time to seed.

Seeding of all species will be achieved with a broadcast applicator in late fall (after November 1). This will allow for the advantage of a natural cold scarification of the seeds as well as sufficient moisture at the onset of germination. A broadcast application will prevent unnecessary soil disturbance associated with a drill seeder, or equipment weight (as it relates to compaction) associated with a hydroseeder. Summer seeding will be attempted on a limited scale on areas that will receive interim revegetation treatments, such as the topsoil stockpiles.

To minimize surface compaction and timeliness of the initial re-seeding efforts in late fall, broadcast seeding will be conducted concurrent with surface ripping/pocking. Ripping and/or pocking of the surface provides a roughened and irregular surface that minimizes surface erosion and helps trap rain and snow melt, improving available precipitation, and thus promoting better germination of distributed seeds. Where the regraded surface allows and post-mine topography is determined to not be too steep, a tracked-dozer with ripper and broadcast seeder (or equivalent method) will be used to seed along (parallel to) the re-contoured surface. Loosened soil resulting from the ripper on the back of the tracked-dozer should allow for adequate cover over concurrent broadcasted seed. On steep slopes that preclude parallel ripping on the regraded contour (slopes of 2H:1V), a hand-broadcast seeder will be used to distribute the approved seed mix. Hand raking of the surface to cover seed will be implemented in pocked areas.

e) Fertilization

Describe fertilization method, type(s) and application rate (if needed).

No fertilizers will be applied to revegetated areas. In areas where soils historically have exhibited nutrient limitations, and reclaimed soils continue to be low in plant-available nutrient content; the use of fertilizers has resulted in the proliferation of invasive species populations.

f) Other Revegetation Procedures

Please describe other reclamation procedures, such as mulching, biosolids application, irrigation, hydroseeding, etc., that may be planned.

Soil material from the waste rock area will be inoculated with mycorrhizal fungi upon completion of recontouring and surface grading and prior to topsoil placement and seeding. Soil material on the existing ore stockpiles will also be inoculated with mycorrhizal fungi. The sparse natural moisture, combined with the low nutrient content of the waste rock material is expected to result in a low germination rate, relative to other productive native soils in the region. The addition of the inoculum may increase the ability of the soil to retain moisture and convert organic elements into plant-available inorganic nutrients thus promoting vegetative germination, establishment, and proliferation.

An application rate of 60 pounds per acre of mycorrhizal fungi will be broadcast across approximately 11 acres associated with the redistributed waste rock material, prior to placement of the topsoil and ripping. An application rate of 60 pounds per acre of mycorrhizal fungi will also be broadcast across approximately 4.5~~6~~ acres associated with the existing ore stockpiles, prior to seeding. Surface ripping is expected to provide sufficient soil mixing to incorporate the inoculum throughout the root zone.

Areas where spotted knapweed is found on the waste rock dump or low grade ore piles will be marked and growth medium from this area will be handled so seed or plant parts do not contaminate any other soil. In addition, the Garfield County Weed Control Department will be contacted and advised of the location of the population.

VIII. Rule R647-4-112 Variance

The Permittee / Operator may request a variance from Rules R647-4-107 (Operation Practices), R647-4-108 (Hole Plugging), and R647-4-111 (Reclamation Practices) by submitting the following information:

1.11 the rule(s) which a variance is requested from; (rule number and content);

1.12 a description of the specific variance requested and a description of the area affected by the variance request; show this area on the Reclamation Treatments Map(s);

1.13 justification for the variance;

1.14 alternate methods or measures to be utilized in the variance area.

Variance requests are considered on a site-specific basis. For each variance requested, attach a narrative which addresses the four items listed above.

DUSA is not requesting variances at this time.

IX. Rule R647-4-113 - Surety

A Reclamation surety must be provided to the Division prior to final approval of this application. In calculating this amount, include the following major tasks:

1) Clean-up and removal of structures.
2) Backfilling, grading and contouring.
3) Soil material redistribution and stabilization.
4) Revegetation (preparation, seeding, mulching).
5) Safety gates, berms, barriers, signs, etc.
6) Demolition, removal or burial of facilities/structures, regrading/ripping of facilities areas.
7) Regrading, ripping of waste dump tops and slopes.
8) Regrading/ripping stockpiles, pads and other compacted areas.
9) Ripping pit floors and access roads.
10) Drainage reconstruction.
11) Mulching, fertilizing and seeding the affected areas.
12) General site clean up and removal of trash and debris.
13) Removal/disposal of hazardous materials.
14) Equipment mobilization.
15) Supervision during reclamation.

To assist the Division in determining a reasonable surety amount, please attach a reclamation cost estimate which addresses each of the above steps. The areas and treatments included in the reclamation treatments map should correspond with items included in the reclamation cost estimate. The reclamation costs used by the Division must be third party costs.

Table 7 presents a summary of the reclamation cost estimate that was prepared in accordance with DOGM guidelines. The estimate is presented in its entirety in Attachment L.

X. Permit Fee [Mined Land Reclamation Act 40-8-7(i)]

The Utah Mined Land Reclamation Act of 1975 [40-8-7 (I)] provides the authority for the assessment of permitting fees. Commencing with the 1998 fiscal year (July 1 - June 30), ***and revised July 1, 2002,*** *annual permit fees are assessed to new and existing notices of intention and annually thereafter until the project disturbances are successfully reclaimed by the Permittee / Operator and released by the Division.*

Large mining permits require an initial submission fee and annual fee of $500.00 for surface disturbance of 50 or less acres, or a $1,000.00 fee for surface disturbance greater than 50 acres (see page six Section III, Rule R647-4-106.3 for estimated disturbance calculation). The appropriate fee MUST accompany this application or it cannot be processed by the Division.

PLEASE NOTE: If you are expanding from a small mining operation to a large mining operation, the appropriate large mine permit fee, less the annual $150.00 small mine fee (if already paid) MUST accompany this application.

The **original** proposed surface disturbance was ~~is~~ less than 50 acres; accordingly, a permit fee of $500 **was** ~~is~~ included with the initial submittal to DOGM.

XI. Signature Requirement

State of Utah Requirement: I hereby certify that the foregoing is true and correct. ***(Note: This form must be signed by the owner or officer of the company/corporation who is authorized to bind the company/corporation).***

BLM Requirement: I hereby declare that I, or persons I have authorized to do so, will complete all necessary reclamation of areas disturbed during the course of my operations to the standards described in 43 CFR 3809.1-3(d) and that reasonable measures will be taken to prevent unnecessary or undue degradation of the federal lands during operations.

Signature of Permittee / Operator/Applicant: _____

Name (typed or print): Harold R. Roberts

Title/Position (if applicable): Vice President – Operations

Date: _____

PLEASE NOTE:

Section 40-8-13(2) of the Mined Land Reclamation Act provides for maintenance of confidentiality concerning certain portions of this report. Please check to see that any information desired to be held confidential is so labeled and included on separate sheets or maps.

Only information relating to the location, size or nature of the deposit may be protected as confidential.

Confidential Information Enclosed: (X) Yes ( ) No

Confidential information is included as Attachment A.

XII. Guidelines for Vegetation and Soils

Vegetation Cover Sampling

Vegetation cover sampling determines the amount of ground that is covered by live vegetation. It is divided into four categories which equal 100 percent. They are:

Vegetation - This is the live perennial vegetation. Care should be taken to avoid sampling in disturbed areas that have a large percentage of annual or weedy vegetation, such as cheatgrass and Russian thistle.

Litter - This is the dead vegetation on the ground, such as leaf and stem litter.

Rock/rock fragments - This is the rock and rock fragments on the soil surface.

Bare ground - This is the bare soil which is exposed to wind and water erosion.

***Cover Sampling** - The following methods are acceptable:*

Ocular Estimation

This method visually estimates the percentage of ground covered in a plot by the four components. Plot size is usually a meter or yard square or a circular plot 36 inches in diameter. Ten to twenty plots should be randomly sampled in each major vegetation type.

Line Intercept

Percent ground cover is obtained by stretching a tape measure (usually 100') over the ground and then recording which of the four components is under each foot mark. At least ten of these transects should be randomly laid out and measured in each major vegetation type.

Soil Survey and Sampling Methods

If a Natural Resource Conservation Service or land management agency soil survey is not available, the Permittee / Operator shall delineate all soil types that will be disturbed by mining on a map. Each soil type shall be sampled for its characteristics and inherent properties. Representative sampling locations should have similar geologic parent material, slopes, vegetative communities and aspects. The sampling locations should be representative of the soil type and be identified on the map. Sampling shall be at a minimum of one for each soil type disturbed.

The soil map needs to be of sufficient scale so that each soil type can be accurately located on the ground.

TABLE 1
PROPOSED SURFACE DISTURBANCE (ACRES)

Description[a]	Previously Disturbed (acres)[b]	Previously Undisturbed (acres)[b]
Portals, Adits, and Vent Holes		
Main Portal Area	0.72	0.00
South Adit Pad (40 x 85)	0.08	0.00
North Adit Pad (20 x 35)	0.02	0.00
VH-1 Pad (30 x 94)	0.06	0.00
VH-3 Pad (21 x 88)	0.04	0.00
VH-4 Pad (62 x 86)	0.12	0.00
VH-5 Pad (32 x 100)	0.07	0.00
VH-6 Pad (48 x 101)	0.11	0.00
VH-7 Pad (50 x 90)	0.00	0.10
VH-8 Pad (50 x 90)	0.00	0.10
VH-9 Pad (50 x 90)	0.00	0.10
Subtotal	**1.23**	~~0.21~~ 0.31
Waste Rock Area (WRA) Subtotal	**7.63**	**0.00**
Roads [c]		
Portal Access Road (40 x 357)	0.33	0.00
South Adit Road (16 x 672)	0.25	0.00
North Adit Road (16 x 664)	0.24	0.00
VH-1 Access Road (16 x 589)	0.22	0.00
VH-3 Access Road (16 x 551)	0.19	0.00
VH-5 Access Road (16 x 293)	0.11	0.00
VH-6 Access Road (16 x 297)	0.11	0.00
VH-7 Access Road (16 x 168)	0.00	0.06
VH-8 Access Road (16 x 964)	0.00	0.35
VH-9 Access Road (16 x 18)	0.00	0.01
Evaporation Pond East Road (16 x 779)	0.29	0.00
Subtotal	**1.73**	**0.42**
Dewatering System		
Evaporation Dam and Pond	22.22	0.00
Waterline Corridor (20 x 2,819) = **total disturbed area**	1.30	0.00
Subtotal	**23.52**	**0.00**
Diversion Channels & Sedimentation Ponds [d]		
WRA Diversion Channel (permanent)	1.50	0.00
County Road Channel (temporary)	0.47	0.00
County Road Sediment Basin (temporary)	~~0.08~~ 0.21	0.00
Subtotal	~~2.05~~ 2.17	**0.00**

TABLE 1 (Continued)
PROPOSED SURFACE DISTURBANCE (ACRES)

Description[a]	Previously Disturbed (acres)[b]	Previously Undisturbed (acres)[b]
Structures and Buildings		
Shop/Warehouse	~~0.06~~ 0.36	0.00
Mine Office/Dry	~~0.08~~ 0.27	0.00
Parking Lot	~~0.45~~ 0.47	0.00
Leach Field	~~0.24~~ 0.28	0.00
~~Building Area Common Areas [e]~~	~~1.73~~	~~0.00~~
Subtotal	~~2.55~~ 1.38	**0.00**
Yards and Storage Areas		
Storage Yard (Laydown Area) ~~1~~	~~1.96~~ 0.17	0.00
~~Storage Yard 2~~	~~0.90~~	~~0.00~~
Fueling Station	0.07	0.00
Generator Area	0.06	0.00
Subtotal	~~2.86~~ 0.30	**0.00**
Stockpile Areas		
OS~~-1~~ Ore Stockpile and Slots Area	~~1.15~~ 1.17	0.00
Northern Existing Stockpile	~~1.64~~ 1.65	0.00
Southern Existing Stockpile	~~2.99~~ 2.88	0.00
TS~~-1~~ Topsoil Stockpile	~~0.31~~ 0.99	0.00
~~TS-2A Topsoil Stockpile~~	~~0.50~~	~~0.00~~
~~TS-2B Topsoil Stockpile~~	~~0.35~~	~~0.00~~
~~TS-3 Topsoil Stockpile~~	~~0.29~~	~~0.00~~
~~TS-4 Topsoil Stockpile~~	~~0.40~~	~~0.00~~
~~TS-5 Topsoil Stockpile~~	~~0.20~~	~~0.00~~
~~Stockpile Area Common Areas [f]~~	~~2.39~~	~~0.00~~
Subtotal	~~10.22~~ 6.22	**0.00**
Common Areas		
Eastern Disturbed Area Common Areas	2.88	0.00
Western Disturbed Area Common Areas	3.66	0.00
Subtotal	6.44	0.00
Total	~~50.98~~ 51.02	~~0.62~~ 0.73
Grand Total Of All Disturbed Areas	~~52.42~~ 51.75	

Notes:

(a) The surface acres of larger disturbances were planimetered from Figure 5 and 6. The measured dimensions in feet, shown in parenthesis, were used to calculate the surface acres of the smaller disturbances.
(b) Spreadsheets used to create the values in this table utilized additional significant digits; however, for simplicity of presentation the numbers have been rounded.
(c) The existing county road and the existing BLM/State road that extends from the county road to the top of the mesa were not included as surface disturbance because these roads are pre-existing and will remain in place after the mine is closed and reclaimed.
(d) The WRA permanent diversion channel will remain intact as part of the reclaimed topography.
(e) The ~~building area~~ common areas include the areas around the buildings and stockpiles that do not have a specified use.
~~(f) The stockpile area common areas include the areas around the stockpiles that do not have a specified use.~~

TABLE 7
RECLAMATION COST ESTIMATE SUMMARY

Item	Cost Estimate
Demolition and Removal of Structures and Foundations	~~$70,145~~ $111,950
Removal and Abandonment of Infrastructure	~~$36,594~~ $35,120
Sealing of Mine Openings	~~$18,544~~ $37,322
General Earthwork	~~$301,191~~ $298,798
Revegetation	~~$28,066~~ $28,212
Mobilization/Demobilization	$13,375
Supervision and Construction Support Facilities	$21,291
Subtotal for Site Reclamation	~~$489,206~~ $546,078
Contingency (10%)	~~$48,921~~ $54,708
Escalation, 5 Years [(a)]	~~$91,790~~ $102,461
TOTAL	~~**$629,917**~~ $703,146

Notes:
[(a)] Based on an inflation rate of 3.2%

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PHASE 3

PHASE 2

PHASE 1

Vent Hole 9

Vent Hole 8

Vent Hole 7

Vent Hole 6

Vent Hole 5

Vent Hole 4

Vent Hole 3

Vent Hole 1

PROPOSED EVAPORATION POND

North Adit

South Adit

Main Portal

Secondary Portal

PROPOSED SURFACE FACILITIES

Former Clay Borrow Area

HWY. 276

T 34 S

T 35 S

R 10 E

R 11 E

R 12 E

SHOOTARING CANYON

LITTLE ROCKIES

LITTLE MOUNTAINS

LEGEND

- PROPOSED VENT HOLES
- EXISTING VENT HOLES
- PROPOSED PRODUCTION SHAFTS
- ORE DEPOSIT
- EXISTING UNDERGROUND WORKINGS
- NEW OR RECONSTRUCTED ROADS
- EXISTING ROADS
- EXISTING 4X4 ROADS
- HIGHWAY 276
- PHASE 1
- PHASE 2
- PHASE 3

2000' 0 2000' 4000'

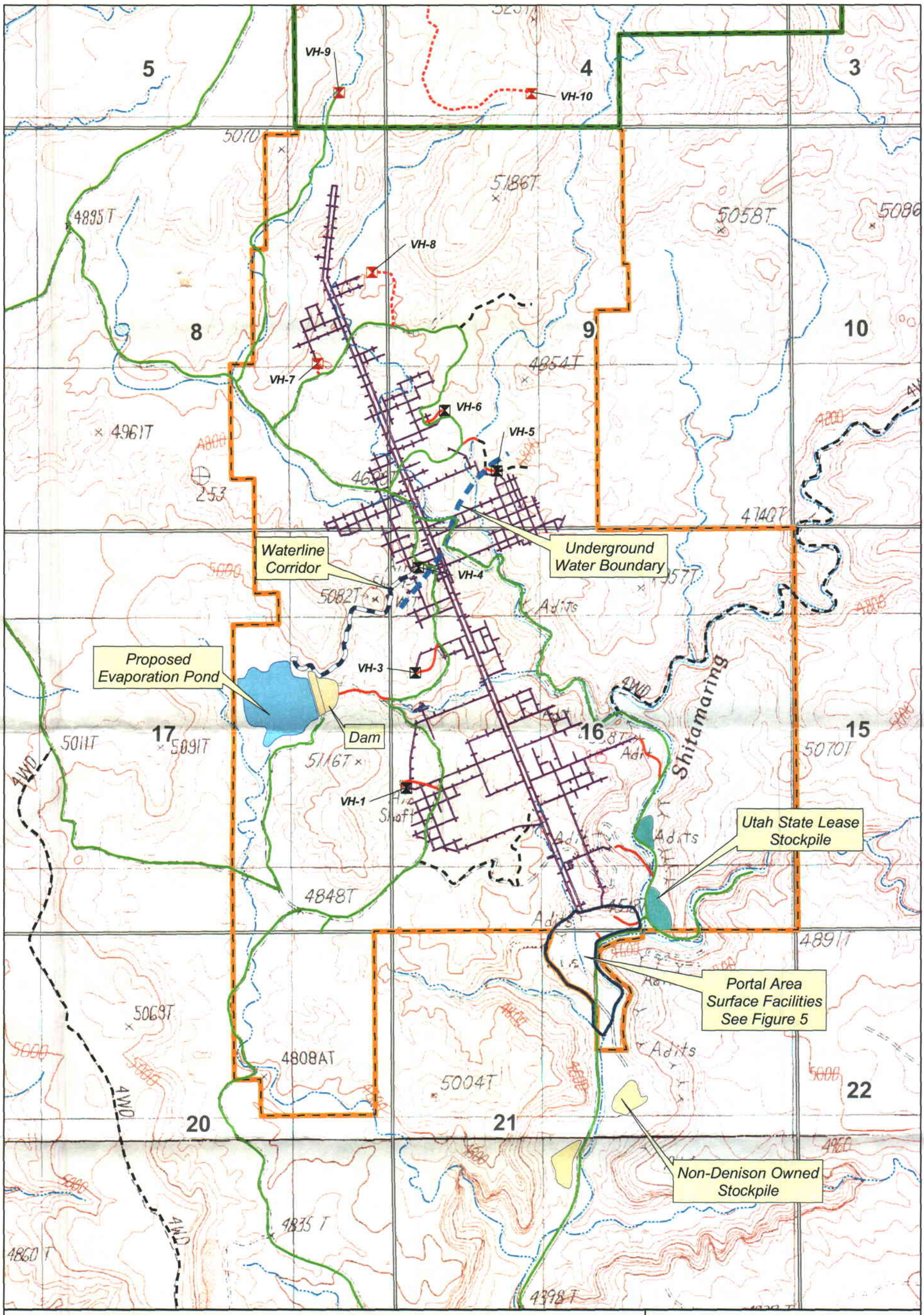
SCALE: 1" = 4000'

DENISON MINES

Project	TONY M. MINE		
County: Garfield	State: Utah	Location: T 34-35 S, R 11 E	
DSGN: FJF	DRN: DMF	DATE: 02/26/2008	REVISION: 2

FIGURE 2
PROJECT AREA MAP

TETRA TECH



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DENISON MINES

Project:	TONY M. MINE		
County: Garfield	State: Utah	Location: T 34-35 S, R11 E	
DSGN: CW	DRN: KDC	Date: 05/13/2008	Revision: 2

FIGURE 3
TOPOGRAPHIC BASE MAP

TETRA TECH

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ble 3

North Adit

South Adit

Secondary Portal

Main Portals

OSA

WRA

TS

Section 16

Section 21

4900

4800

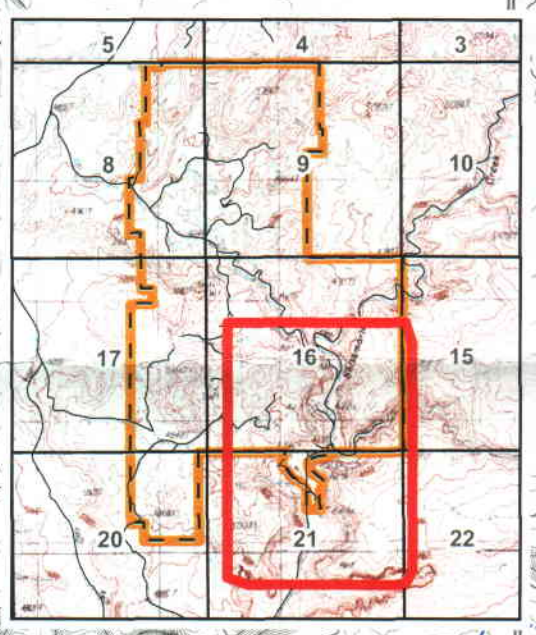
4600

4700

4500

5000

490



Legend

- Surface Disturbance Boundary
- Constructed Channel
- Existing Drainage
- Culvert
- Site Road
- Fence
- Mine Portal
- Topsoil Stockpile Area
- Ore Stockpile Area
- Waste Rock Area
- Hard Basin
- Utah State Lease Stockpile
- Non-Denison Owned Stockpile
- Building
- Sediment Basin
- Phase 1 Boundary
- Section Line

Groundsurface Contours

- 20-ft Contour
- 50-ft Contour

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N

0 500 Feet

DENISON MINES

Project:	TONY M. MINE		
County: Garfield	State: Utah	Location: T. 35S, R. 11E	
DSGN: CW	DRN: KDC	Date: 05/28/2008	Revision: 2

FIGURE 4A
Surface Facilities Map - Portal Area

TETRA TECH

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Vent Hole 4 and Storage Tank
Waterline Corridor
Evaporation Pond
Section 17
Section 16
Vent Hole 3
Evaporation Pond Dam
Dike and Emergency Overflow
Vent Hole 1
North Adit
Utah State Lease Stockpile
South Adit
Utah State Lease Stockpile
Secondary Portal
Gate
Main Portals
Hard Basin
OSA
WRA
Section 20
Section 21
5000
5100
4900
4800
4700
4600
4500
N
500 0 500 Feet

5 4 3
8 9 10
17 16 15
20 21 22

Legend

- Vent Hole
- Phase 1 Boundary
- Surface Disturbance Boundary
- Existing Road
- Reconstructed Road
- Existing 4-Wheel Drive Road
- Waterline Corridor
- Ephemeral Drainage
- Fence
- Mine Portal
- Section Line
- Evaporation Pond Dam
- Waste Rock Area
- Ore Stockpile Area
- Utah State Lease Stockpile

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DENISON MINES

Project:	TONY M. MINE		
County: Garfield	State: Utah	Location: T. 35S, R. 11 E	
DSGN: CW	DRN: KDC	Date: 05/28/2008	Revision: 2

FIGURE 4B
Surface Facilities Map
Evaporation Pond Area

TETRA TECH

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Proposed Vent Hole 9

Proposed Vent Hole 8

Proposed Vent Hole 7

Vent Hole 6

Vent Hole 5

Vent Hole 4

Waterline Corridor

Section 8

Section 9

Section17

Section16

5 3 8 9 10 17 16 15 20 21 22

5100 5000 4900 4800 4700

Legend

- Vent Hole
- Phase 1 Boundary
- Surface Disturbance Boundary
- Existing Road
- New Road
- Reconstructed Road
- Existing 4-Wheel Drive Road
- Ephemeral Drainage
- Waterline Corridor
- Fence
- Section Line

Groundsurface Contours

- 20-ft Contour
- 50-ft Contour

N

500 0 500 Feet

DENISON MINES

Project:	TONY M. MINE		
County: Garfield	State: Utah	Location: T. 35 S, R. 11E	
DSGN: FJF	DRN: KDC	Date: 05/13/2008	Revision: 2

FIGURE 4C
Surface Facilities Map - North Vent Holes

TETRA TECH

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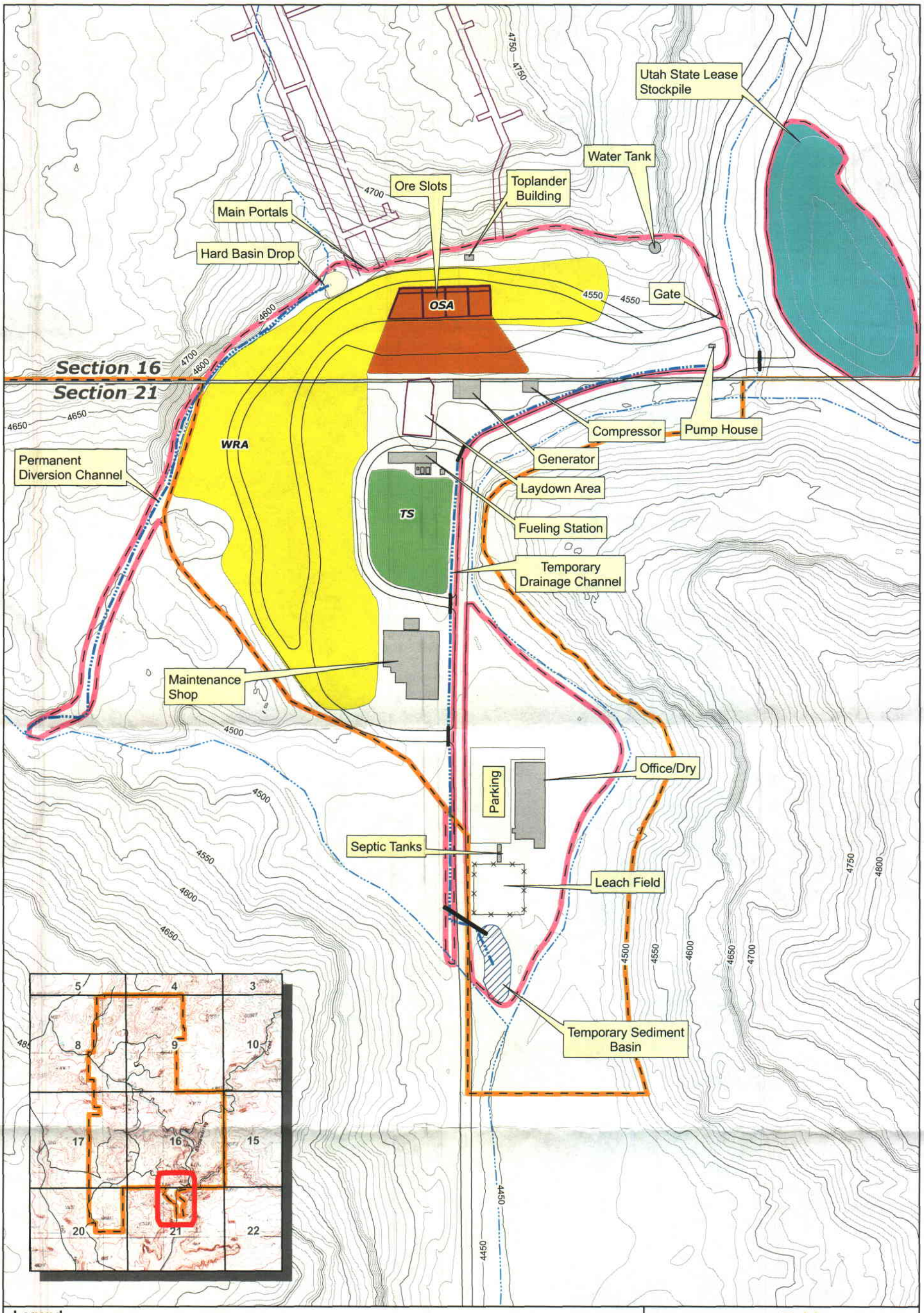

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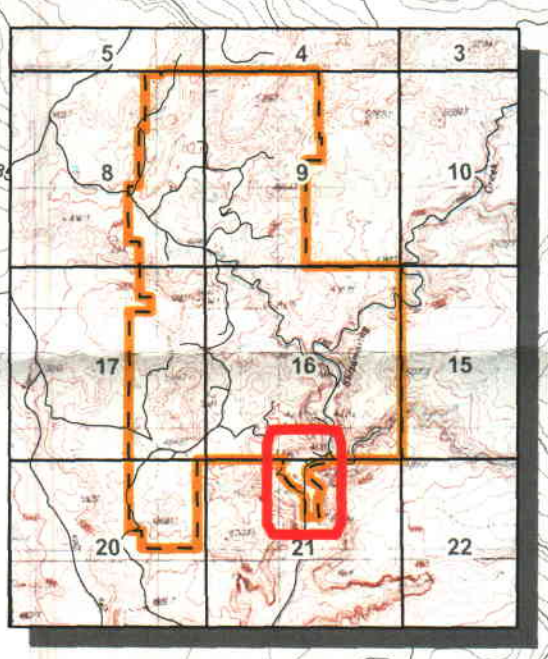
Utah State Lease Stockpile
Water Tank
Toplander Building
Ore Slots
Main Portals
Hard Basin Drop
Gate
Section 16
Section 21
Compressor
Pump House
Permanent Diversion Channel
Generator
Laydown Area
Fueling Station
Temporary Drainage Channel
Maintenance Shop
Office/Dry
Parking
Septic Tanks
Leach Field
Temporary Sediment Basin
4750
4700
4600
4650
4500
4550
4800
4450



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Legend

- Surface Disturbance Boundary
- Constructed Channel
- Existing Drainage
- Culvert
- Site Road
- Fence
- Underground Workings
- Phase 1 Boundary
- Section Line
- Hard Basin
- Building
- Utah State Lease Stockpile
- Non-Denison Owned Stockpile

Soil Stripping Depths

- 6" (Revegetated Waste Rock and Existing Denison-Owned Stockpiles)
- 5.1"-10"
- Topsoil Removed During Flooding, Therefore Not Available for Stripping

Groundsurface Contours

- 10-ft Contour
- 50-ft Contour

N

0 200 Feet

DENISON MINES

TONY M. MINE

County: Garfield	State: Utah	Location: T. 35S , R. 11E	
DSGN: CW	DRN: KDC	Date: 05/28/2008	Revision: 2

FIGURE 7
Topsoil Stripping Map

TETRA TECH

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North Adit

South Adit

Secondary Portal

Main Portals

Hard Basin

Permanent Diversion Channel

Section 16

Section 21

4900

4800

4700

4600

4500

5000

490

5 4 3
8 9 10
17 16 15
20 21 22

Legend

- Existing Culvert
- Sealed Mine Portal
- Existing Road
- Existing 4-Wheel Drive Road
- Ephemeral Drainage
- Channel
- Section Line
- Phase 1 Boundary

Seed Mix, Method

- Blackbrush, Pocked
- Blackbrush, Ripped
- Greasewood, Pocked
- Blackbrush, Ripped with M Fungi Inoculum
- Greasewood, Ripped
- Greasewood, Ripped with M Fungi Inoculum

- Non-Denison Owned Stockpile

Groundsurface Contours

- 20-ft Contour
- 50-ft Contour

N

500 0 Feet

RECEIVED
JUN 0 6 2008
DIV. OF OIL, GAS & MINING

DENISON MINES

Project: TONY M. MINE			
County: Garfield	State: Utah	Location: T. 35S, R. 11E	
DSGN: CW	DRN: KDC	Date: 05/13/2008	Revision: 2

FIGURE 10A
Reclamation Treatments Map - Portal Area

TETRA TECH

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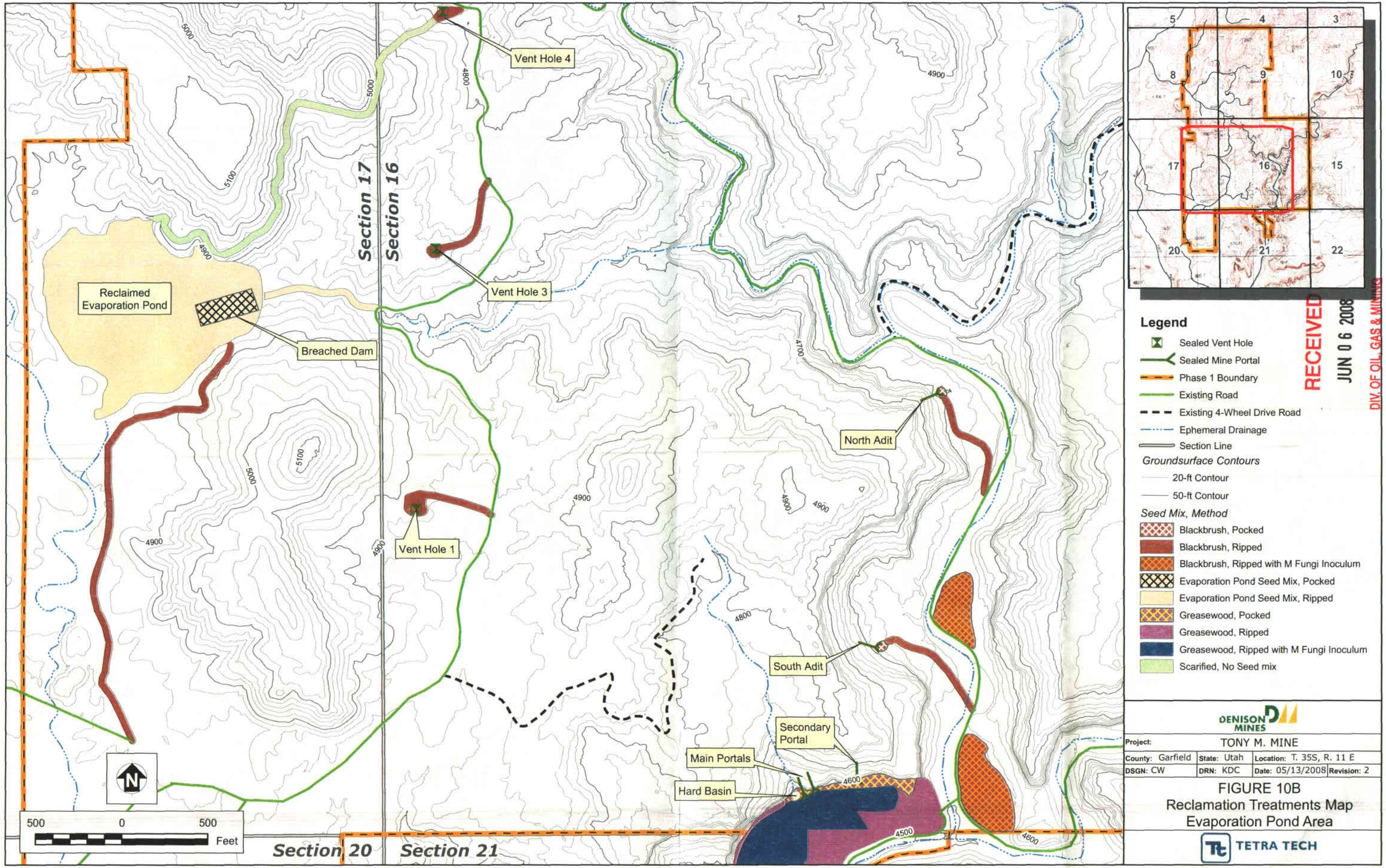

DENISON MINES

Project:	TONY M. MINE		
County: Garfield	State: Utah	Location: T. 35S, R. 11 E	
DSGN: CW	DRN: KDC	Date: 05/13/2008	Revision: 2

FIGURE 10B
Reclamation Treatments Map
Evaporation Pond Area

TETRA TECH

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Vent Hole 9

Vent Hole 8

Vent Hole 7

Vent Hole 6

Vent Hole 5

Vent Hole 4

Section 8

Section 9

Section 17

Section 16

5000

5100

4900

4800

4700

5 3 8 9 10 17 16 15 20 21 22

Legend

- Sealed Vent Hole
- Ephemeral Drainage
- Phase 1 Boundary
- Existing Road
- Existing 4-Wheel Drive Road
- Section Line

Seed Mix, Method

- Blackbrush, Ripped
- Greasewood, Ripped
- Salt Shrub, Ripped
- Scarified, No Seed Mix

Groundsurface Contours

- 20-ft Contour
- 50-ft Contour

500 0 500 Feet

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DENISON MINES

Project: TONY M. MINE			
County: Garfield	State: Utah	Location: T. 35 S, R. 11E	
SGN: CW	DRN: KDC	Date: 06/04/2008	Revision: 2

FIGURE 10C
Reclamation Treatments Map
North Vent Holes

TETRA TECH

S:\Project\DUSA\P4214.004 Tony M Phase 2\GIS\mxd\Figures\NOI\Fig4C_NorthVentHoles_D.mxd TtEMI Kurt. Cholak